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United States
Department of
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Forest Service

Tongass
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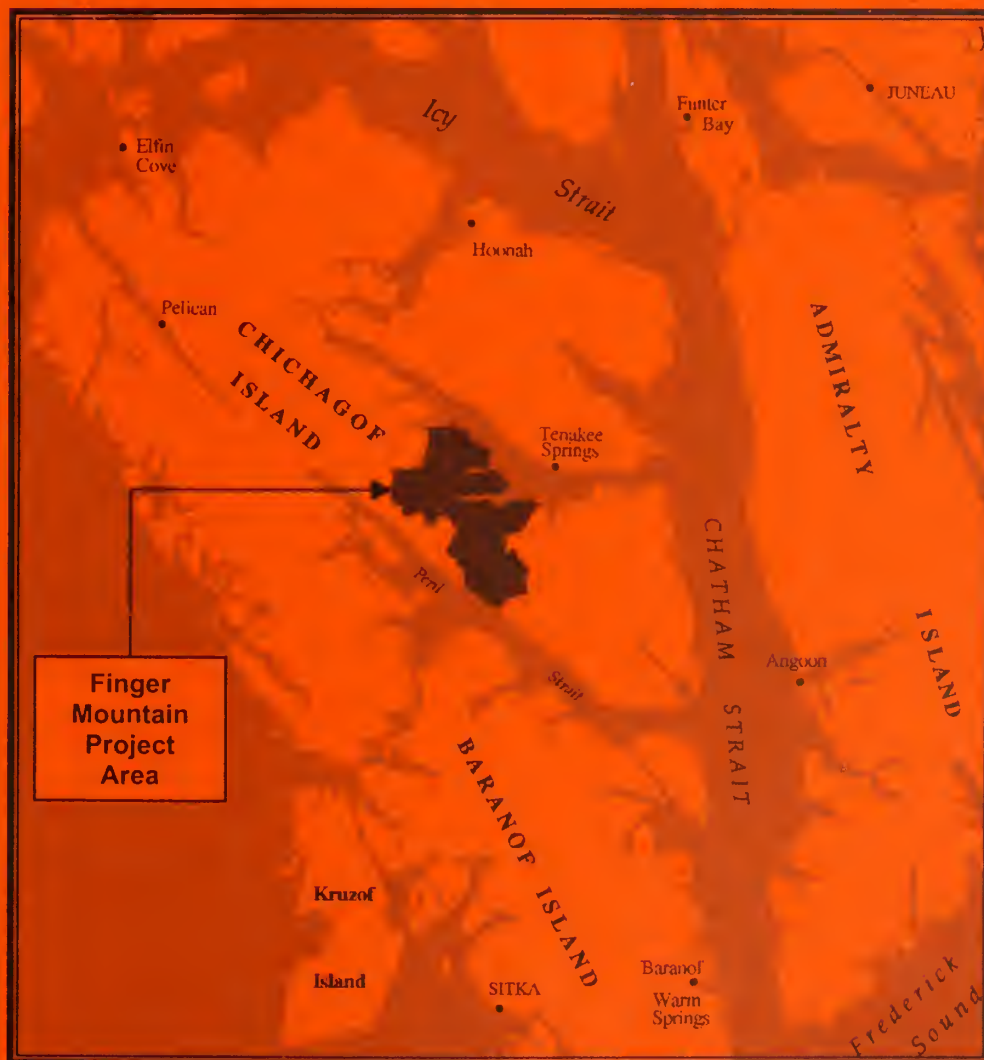
June 2003



Finger Mountain Timber Sale(s)

Record of Decision and Final Environmental Impact Statement

Volume II



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Volume II

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Appendix A

Reasons for Scheduling the Environmental Analysis of the Finger Mountain Project Area



Appendix A

Reasons for Scheduling the Environmental Analysis of the Finger Mountain Project Area Timber Sale

Introduction

This Appendix provides a detailed explanation of the rationale for a specific timber sale project and its importance to the multi-year timber program on the Tongass National Forest. To accomplish this, the following questions are answered.

- Why is timber from the Tongass National Forest being offered for sale?
- What steps must be completed to prepare a sale for offer?
- How does the Forest Service develop expectations about the market demand for timber?
- How does the Forest Service maintain an orderly and predictable timber sale program?
- How does the Forest Service decide where timber sale projects should be located?
- How does this project fit into the Tongass timber program?
- Why can't this project be located somewhere else?

Coordinated timber sale planning is essential for meeting the goals of the Tongass Land Management Plan and to provide an orderly flow of timber to local industry. To determine the volume of timber to offer each year, the Forest Service can look to current market conditions and the level of industry operations. However, the lengthy planning process, of which this document is a part, requires the Forest Service to rely on projections of future harvest levels to decide how many timber sale projects to begin each year. This document explains how the Forest Service uses information about future markets and past experience with the logistics of timber sale planning to determine the volume of timber that needs to be started through this process each year. Using a detailed timber sale schedule that provides information about each sale as it moves through each stage of the planning process, this Appendix explains the rationale and the necessity for completing this particular timber sale project at this point in time.

Why is Timber from the Tongass National Forest Being Offered for Sale?

National Legislation

On a national level, the legislative record is very clear about the role of the timber program in the multiple-use mandate of the national forests. The Organic Act of 1897, 16 USC 473-481 (partially repealed in 1976) directed the agency to manage the forests in order to "improve and protect the forest ... [and] for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States" (emphasis added). The Multiple-Use Sustained Yield Act of 1960, 16 U.S.C. 528-531, directs the Forest Service to administer federal lands for "outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

The National Forest Management Act of 1976 (NFMA; 16 U.S.C. 472a) states that "the Secretary of Agriculture...[may sell, at not less than appraised value, trees, portions of trees, or forest

Appendix **A**

Alaska-specific Legislation

products located on National Forest System Lands].” Although the heart of the Act is land management planning, the Act also sets policy direction for timber management and public participation in Forest Service decision-making. Under NFMA, the Forest Service was directed to “limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis” (16 U.S.C. 1611).

The NFMA directed the Forest Service to complete land management plans for all units of the National Forest System. Forest Plans were to be developed by an interdisciplinary team to provide for the coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.

Legislation unique to Alaska also directs the Forest Service to maintain a commercial timber program. The Alaska National Interest Lands Conservation Act (ANILCA; P.L. 96-487, 1980) and the Tongass Timber Reform Act (TTRA; P.L. 101-625, 1990) speak directly to the issue of Tongass timber supply. Section 705(a) of ANILCA directed the Forest Service to maintain a timber supply from the Tongass at a rate of 4.5 billion board feet per decade. To ensure that the timber target was met, Congress provided for a \$40 million annual earmark to fund pre-roading, cultural treatments, and innovated logging systems.

Section 101 of TTRA repealed the timber supply mandate and fixed appropriations of ANILCA and replaced them with the following more general direction:

Sec. 705. (a), Subject to appropriations, other applicable law, and the requirements of the National Forest Management Act (P.L. 94-588); except as provided in subsection 9d) of this section, the Secretary shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the annual market demand from such forest for each planning cycle.

Timber from the Tongass National Forest is being offered as part of the multiple use mission of the Forest Service as identified in public laws. Alaska-specific legislation and the Forest Plan directs the Forest Service to seek to provide timber to meet market demand subject to appropriations and balancing of forest uses.

Tongass Forest Plan

The 1979 *Tongass National Forest Land and Resource Management Plan* (TLMP) was the first Forest Plan to be completed. A revised Forest Plan was issued in 1997 and modified in 1999. Subsequently, Alaska Federal Court Judge James K. Singleton vacated the 1999 Forest Plan Record of Decision (ROD) in a March 30, 2001 court decision.

Alaska Federal Court Judge James K. Singleton also directed the Forest Service to Supplement the 1997 Forest Plan FEIS to consider the wilderness values of Inventoried Roadless Areas. The ROD for this Supplemental Environmental Impact Statement was signed in February 2003 and reaffirms the 1997 ROD.

The Roadless Area Conservation Final Rule (Roadless Rule) was signed by the Secretary of Agriculture in January 2001. This rule generally established prohibitions on road construction, road reconstruction, and timber harvest in Inventoried Roadless Areas on National Forest System lands. The rule prohibits logging and road building on nearly 60 million acres of lands, 9.3 million acres of which are within the Tongass National Forest.

In May 2001, the U.S. District Court for the District of Idaho enjoined the Forest Service from implementing the Roadless Rule, a decision that was subsequently appealed. In December 2002, a

three-judge panel of the Ninth Circuit Court of Appeals reversed the Idaho ruling. The case is currently awaiting consideration by a larger panel of Ninth Circuit judges. The Roadless Rule contains exemption language for the Tongass National Forest. This language exempts projects for which availability of the Draft EIS was published in the Federal Register prior to January 12, 2001 from the prohibitions of the rule. Several projects, including this one, will be offered that meet exemption criteria.

With regard to timber production, the ROD for the 1997 Plan states:

The Tongass National Forest will continue timber harvest consistent with sustained yield and multiple use goals...Although the maximum amount of timber that could be harvested during the first decade of the Forest Plan implementation is an average of 267 [million board feet] MMBF per year, a level of 200 MMBF or less is more likely to be offered over the next few years, given current market conditions and the transition that both the timber industry and the Forest Service is experiencing.

The timber resource will be managed for production of sawtimber and other wood products from timberlands available for sustainable timber harvest, on an even-flow, sustained-yield basis and in an economically efficient manner. We will seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle...

The Tongass National Forest will continue to allow timber harvest while maintaining sustained yield and multiple use goals. The forest-wide standards and guidelines for timber include general direction to “[e]nsure that silvicultural systems other than clearcutting are considered through an appropriate project level analysis process. However, uneven-aged management systems will be limited to areas where yarding equipment suited to selective logging can be used...

Forest-wide, considering all land allocations where timber harvest is permitted, it is estimated that 65 percent of harvesting will involve clearcutting, with the remaining 35 percent utilizing other methods.

In the day to day operation of the Tongass timber program, the Forest Service attempts to strike a balance among timber availability as documented in the Forest Plan, the market demand for timber in Southeast Alaska, the needs and desires of other forest users, and funding allocations made by Congress.

What Steps Must Be Completed to Prepare a Sale for Offer?

The timber sale program is complex. A number of projects are underway at any given point in time, each of which may be in a different stage of planning and preparation. A system of checkpoints, or “gates,” helps the Forest Service track the significant milestones of each project from inception to contract termination. Each project passes through all of the following gates, with the complexity of the sale determining the complexity of the final product at each stage.

Gate 1 – Completion of Position Statement

The Position Statement is a brief analysis of the project area with the intent of determining the feasibility of the potential timber sale. This is the first step in the timber sale planning process and it is usually completed from seven to ten years before a sale is offered. After the Position Statement is developed, the Forest Service decides whether to continue to the next phase of the project where a significant investment in time and money will be made.

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Gate 2 – Sale Area Design, Environmental Documentation, and Decision

This phase of the project is commonly referred to as the “NEPA” phase (i.e., National Environmental Policy Act phase) and includes inventory, public scoping, analysis, draft disclosure of the effects of the project on the environment, public comment, final analysis and disclosure, decision, potential appeal, and litigation. Gate 2 activities are generally completed two to six years before a sale is offered. The end product of this phase, an environmental decision document, forms the starting point for the next phase.

Gate 3 – Plan Implementation and Field Layout

Gate 3 activities are typically completed one to three years before a sale is offered. During this phase, the information and direction included in the decision document (Gate 2) is used to designate the actual project on the ground. Additional site-specific information is collected at this time.

Gate 4 – Appraisal Offering Package

The costs and value associated with the timber sale designed in Gate 3 are computed and packaged in a timber sale contract. The contract tells the prospective timber sale purchaser how the sale must be harvested to be in conformance to the project decision document. This phase of the Gate system occurs during the final year of the project development and culminates with the advertisement of the project for sale.

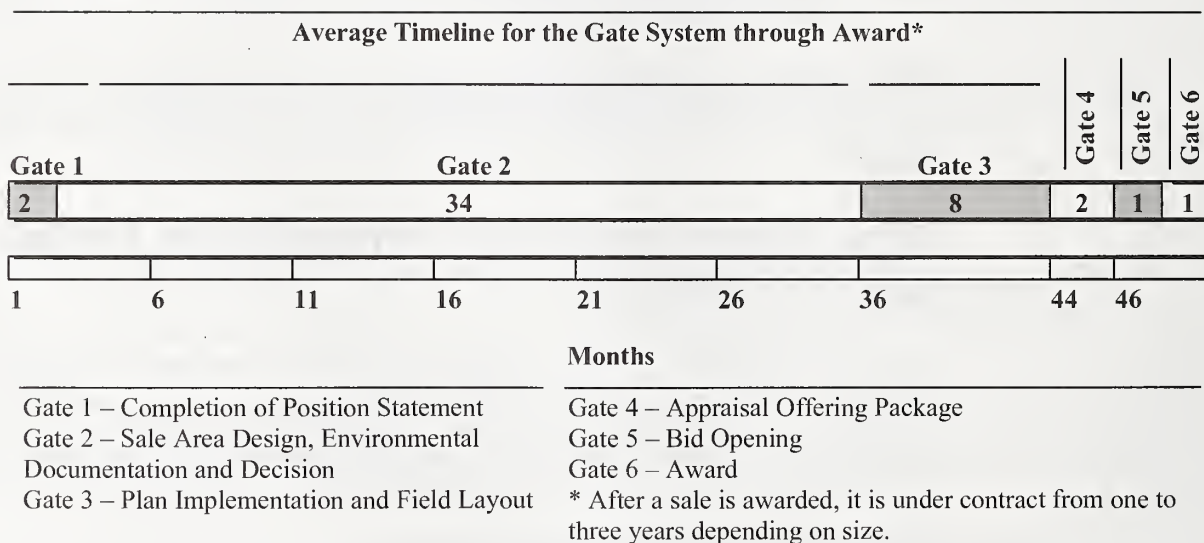
Gate 5 – Bid Opening

Gate 5 is completed with the opening of bids for the project. If a bid is submitted, contractual provisions govern when the award of the sale will take place, when the sale will be completed, and how timber removal will occur.

Gate 6 – Award

Gate 6 is the formal designation of a contract between a bidder and the Forest Service.

Figure A-1
Average Timeline for the Gate System



* Source: Alaska Regional Office unpublished data, Average time for Gate 2 EIS document (R10 2002 Planning Workshop)

How does the Forest Service Develop Expectations about Future Timber Markets?

The Tongass National Forest makes two determinations on volume to be offered. The first is a determination on volume to be offered for the current year (annual market demand). The annual market demand is analogous to assessing industry performance in the short-term. In the short-run a firm will make use of its existing equipment to maximize profits or minimize losses. The general approach is to consider the timber requirements of the region's sawmills at different levels of operation and under different assumptions about market conditions and technical processing capability. These assumptions provide a basis for estimating the volume of timber likely to be processed by the industry as a whole in any given year. Timber inventory requirements are acknowledged and estimated in a related calculation. The volume of timber likely to be purchased is equal to the volume needed to make up any inventory shortfall in addition to the volume likely to be harvested in the coming year. The document titled *Evaluating the Demand for Tongass Timber* (USDA, Forest Service, R-10; Morse; September 28, 1998) forms the basis for how these estimates were developed. The document titled *Tongass National Forest Timber Sale Procedures* (USDA, Forest Service, R-10; Morse, October 2000) documents actual estimates for the current year. This estimate is what the Tongass plans to offer for the current year of the Ten Year Timber Sale Schedule pending sufficient funding to do so. Final procedures can be located in the document titled *Responding to the Market Demand for Tongass Timber* (USDA, Forest Service, R-10-MB-413, Morse, April 2000).

Based on the analysis documented in the *Tongass Timber Sale Procedures*, for Fiscal Year 2003, the Tongass National Forest offering required to meet timber supply objectives is 151 MMBF. The offer planned will be a combination of new, previously offered, or previously offered and reconfigured timber sales. Both standing timber and salvage will be components of the program. Offerings will consist of those targeted for Small Business qualified firms, and a portion of the volume will be made available for the open market.

Life of the Forest Plan (Market Demand over the Planning Cycle)

Given the long time involved in preparing a timber sale, the proposed timber sales in this document may not be harvested for 3 to 4 years or longer, not including time for appeals or litigation. The Forest Service needs some idea of what the long-term timber demand will be given cycles in the market. On average, what should the Forest Service plan for offer, given that timber from a NEPA document may not be harvested for 4 years into the future? The Forest Service needs to take a long-term view for planning purposes. To answer this question, the Forest Service asked the Pacific Northwest Research Station for professional assistance.

As the Tongass Land Management Plan was being revised in 1997, research economists at the Pacific Northwest Research Station (PNW) were asked to update their earlier projections of Alaska timber products output and timber harvest by ownership. The most recent projections of timber harvest over the planning cycle account for several dramatic changes in the region's manufacturing capabilities, increased competition from a number of sources, and the steady erosion of North America's share of Japanese timber markets.

The Forest Service documents these projections and the means of implementation through the issuance of a Ten Year Timber Sale Schedule. Each year this plan is updated whereby the current year is dropped at the culmination of the fiscal year and a new year ten is added. The basis for this schedule is long-range timber market projections documented in the publication titled *Timber Products Output and Timber Harvest in Alaska: Projections for FY97-10* (Brooks and Haynes; PNW-GTR-409, September, 1997). These projections of Alaska timber products output, the derived demand for raw material, and timber harvest by owner are developed from a trend-based analysis. These projections reflect the consequences of recent changes in the Alaska forest sector

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and long-term trends in markets for Alaska products. With the closure of the two Southeast Alaska pulp mills, demand for Alaska National Forest timber now depends on markets for sawn wood and the ability to export manufacturing residues and lower grade logs. Three alternative projections are used to display a range of possible future demand (Table A-1). Areas of uncertainty include the prospect of continuing changes in markets and in conditions faced by competitors and the speed and magnitude in investment in manufacturing in Alaska.

Demand projections are important for program planning. They provide important guidance to the Forest Service for requesting budgets, for making decisions about workforce and facilities, and for indicating the need to begin new NEPA analysis for future program offerings. They also provide a basis for expectations regarding future harvest, and thus provide an important source of information for establishing the schedule of probable future sale offerings. The weight given to the projections will vary depending on a number of factors, such as how recently they were calculated and how well they appear to have accounted for recent, site-specific events in the timber market.

Table A - 1
Projected National Forest Harvest¹

Fiscal Year	Projected Harvest (MMBF)			Actual
	Low	Medium	High	
1998	77.3	86.0	112.2	119.8
1999	86.4	99.3	127.9	145.8
2000	95.5	115.9	142.7	146.8
2001	104.6	129.0	157.7	47.8 ²
2002	113.7	134.9	173.1	29.6 ³
2003	122.8	140.8	188.9	
2004	131.9	146.5	205.0	
2005	131.9	152.2	221.4	
2006	131.9	157.8	238.2	
2007	132.0	163.4	255.3	
Average	112.8	132.6	182.2	98
Mean		168.7		

¹ For Fiscal Years 2003-2009, the Tongass National Forest plans to schedule approximately 160 MMBF for sale each year over the life of the Forest Plan. This schedule is based on the projections documented in *Timber Products Output and Timber Harvest in Alaska: Projections for FY97-10* (Brooks and Haynes; PNW-GTR-409, September, 1997) and current volumes in the timber sale pipeline process. Prior to the beginning of each fiscal year, the amount of volume to be scheduled in that fiscal year is once again analyzed to determine if the projection meets the anticipated need.

² Truncated logging season due to Judge James K. Singleton's TLMP Appeal Decision, March 30, 2001.

³ Tongass volume harvested as of August 31, 2002.

How does the Forest Service Maintain an Orderly and Predictable Timber Sale Program?

Pools of Timber (Pipeline Volume)

As discussed earlier, the Forest Service tracks accomplishment of various stages of development of each timber sale with the Gate System process. From a timber sale program standpoint, it is also necessary to track and manage multiple projects through time as projects collectively move through the Gate System. Tracking of the multiple projects can be likened to following various segments of several projects through a pipeline of time. Because of the relatively long timeframes needed to accomplish a given timber sale and the complexities inherent in timber sale project and program development, it is necessary to track various timber sale program volumes from Gate 1 through Gate 6. Gate 1 volume represents a large pool of program volume, but represents a relatively low investment from project to project. This relative investment level offers the timber program manager a higher degree of flexibility and thus, does not greatly influence the flow of volume through the pipeline. In addition, tracking of how much volume near the end of the pipeline that is in appeals or litigation may be necessary to determine potential effects on the flow of potential timber sales.

The goal of the Tongass National Forest is to provide an even flow of timber sale offerings on a sustained yield basis. In past years, this has been difficult to accomplish due to continual reductions in the suitable timberland base, reductions in the timber industry processing capabilities, rapid market fluctuations, and Forest Plan modifications and litigation. To achieve an even flow of timber sale offerings, ‘pools’ of projects in various stages of the Gate System will be maintained so volume offered can be balanced against current year demand and market cycle projections. Today, upward trends in demand are reacted to by moving outyear timber projects forward leaving outyears incapable of meeting the needs of the industry. In other instances, a number of new projects are started based on today’s market but not available for a number of years. By the time the added projects are ready for offer, the market and demand for this volume has changed. Three pools are being tracked to achieve an even flow of timber sale offerings.

- **Timber volume under analysis (Gate 2):** Timber volume under analysis contains sales being analyzed and undergoing public comment through the NEPA process. This process can often take from one to five years and reaches a significant milestone when a NEPA decision is made. This pool includes any project with a formal Notice of Intent through those with a decision document issued. Volume in appeals and litigation will be tracked as a subset of this pool as necessary.
- **Timber volume available for sale (Gate 3, Gate 4 and Gate 5):** Timber volume available for sale contains sales for which environmental analysis has been completed, and administrative appeals and litigation (if any) have been resolved. They have also been fully prepared and are available to managers to schedule for sale offerings. Managers need to maintain enough volume in this pool to be able to schedule future sale offerings in an orderly manner of the size and configuration that best meets the need of the public. As a matter of policy and sound business practice, the Forest Service attempts to announce probable future sale offerings at least one year in advance. This allows potential purchasers an opportunity to do their own evaluations of these offerings in order to determine whether to bid and, if so, at what level.
- **Timber volume under contract (Gate 6):** Timber volume under contract contains sales that have been sold and contracts awarded to purchasers, but have not yet been fully harvested. Timber contracts typically, but not always, give the purchaser three years to harvest and remove the timber purchased. Long standing Forest Service practice is to

Appendix A

attempt to maintain about two to three years of unharvested timber volume under contract to timber purchasers. This volume of timber is the industry's dependable timber supply, which allows immediate flexibility in business decisions. This practice is not limited to the Alaska Region, but is particularly pertinent to Alaska because of the nature of the land base. The relative absence of roads, the island geography, the steep terrain, and the consequent isolation of much of the timber land means that timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

What drives the various timber sale program pipeline pool volume is a combination of actual harvest and projected demand. As purchasers harvest timber, they deplete the volume under contract. Managers track harvest and offer sales that give the industry as a whole the opportunity to replace this volume and build or maintain their working inventory. Although there can be significant variation for practical reasons from year to year, in the long-run, over both the high points and low points of the market cycle, timber harvest will equal timber sales.

The Forest Service, based on historical patterns, determines the amount of pipeline volume in each of the pools. Table A-2 displays volume levels that are expected to be maintained in each pool.

- Pool 1, Timber Volume Under Analysis, is expected to be maintained at approximately 4.5 times the amount of anticipated harvest.
- Pool 2, Timber Volume Available for Sale, is expected to be maintained at approximately 1.3 times the amount of anticipated harvest.
- Pool 3, Volume Under Contract, is expected to be maintained at approximately 3 times the amount of anticipated harvest.

The objective of the pools concept is to maintain sufficient volume in preparation and under contract to be able to respond to yearly fluctuations in a timely manner.

Table A - 2
Pipeline Pool Matrix

Pipeline Pool Volume	Flows	End of FY 02	Planned During FY 03	End of FY 03
1. Volume Under Analysis ¹ (Gate 2) (MMBF) (4.5 times expected harvest)		413 ²	562 ³	293 ³
2. Volume Available for Sale ⁴ (Gate 3, Gate 4 and Gate 5) (MMBF) (1.3 times expected harvest)	NEPA Cleared	108 ³	319 ³	276 ³
	Offered		151 ⁵	
	Sold		123 ⁵	
3. Volume Under Contract ⁶ (Gate 6) (MMBF) (3.0 times expected harvest)		196 ⁷		369 ⁸
	Volume Harvested*		123 ⁹	

Matrix crosswalk between Gate Tracking System and Pools of Timber Concept:

¹Gate 2: Decision document that is viable for sale after completion of appeals and litigation.

²Actual figure from Tongass National Forest Schedule of Proposed Actions.

³Estimated figure.

⁴NEPA cleared timber volume: Gate 3, field preparation work; Gate 4, timber sale contract package preparation; Gate 5, Timber Sale bid opening.

⁵Tongass National Forest Timber Sale Procedures, Morse, October 2000, Table page 4, updated August 2003 by William Wilson, Regional Office, Forest Management Planning Group Leader.

⁶Gate 6: Timber sale award and contract execution, based on the Timber Sale Statement of Accounts.

⁷Volume under contract as of June 30 2002. Assumes the following: GFP Sawmill (50MMBF) and Metlakatla Sawmills (95 MMBF) removed from capacity estimate. Estimate of uneconomic timber sales eligible for cancellation removed from VUC (70MMBF). Sales not available due to Judge Singleton's injunction removed from VUC (65MMBF).

⁸Three times the amount of volume projected in the LOW market scenario given in Timber Output and Timber Harvests in Alaska: Projection for 1997 – 2010, Gen. Tech. Report. PNW-GTR-409, Portland, Oregon, USDA Forest Service, PNW Research Station.

⁹Projected harvest for FY 2003, from the PNW Research Station using the LOW market scenario (see #8 above).

*Note-The amount of volume estimated to be harvested for the year sets the basis for what will be maintained in Pools 1-3 (Gates 2 through 6). Should this estimate be incorrect, adjustments can be made in the following years without significant departures in outyear program capabilities.

Table A - 3
Timber Volume in Appeals and/or Litigation

Timber volume remanded on appeals and/or enjoined in litigation *	33.9 Million Board Feet
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*As of 01/01/03. This figure does not include those environmental documents on hold due to Judge Singleton's March 30, 2001 court ruling.

How Does the Forest Service Decide Where Timber Sale Projects Should be Located?

The Allowable Sale Quantity (ASQ)

The 1997 Forest Plan ROD established an Allowable Sale Quantity (ASQ) for timber at 2.67 billion board feet per decade, which equates to an annual average of 267 MMBF. The ASQ serves as an upper limit on the amount of timber that may be offered for sale as part of the regularly scheduled timber sale program. It consists of two separate Non-Interchangeable Components (NICs) called NIC I, which is 2.2 billion board feet of timber per decade, and NIC II, which is .47 billion board feet per decade. There are two purposes of partitioning the ASQ into two components:

- 1) to maintain the economic sustainability of the timber resource by preventing the over-harvest of the best operable ground, and
- 2) to identify that portion of the timber supply that is at risk of attainment because of marginal economic conditions.

The NIC I component includes lands that can be harvested with normal logging systems. The NIC II component includes land that has high logging costs due to isolation or special equipment requirements. Most of these NIC II lands are presently considered economically and technically marginal.

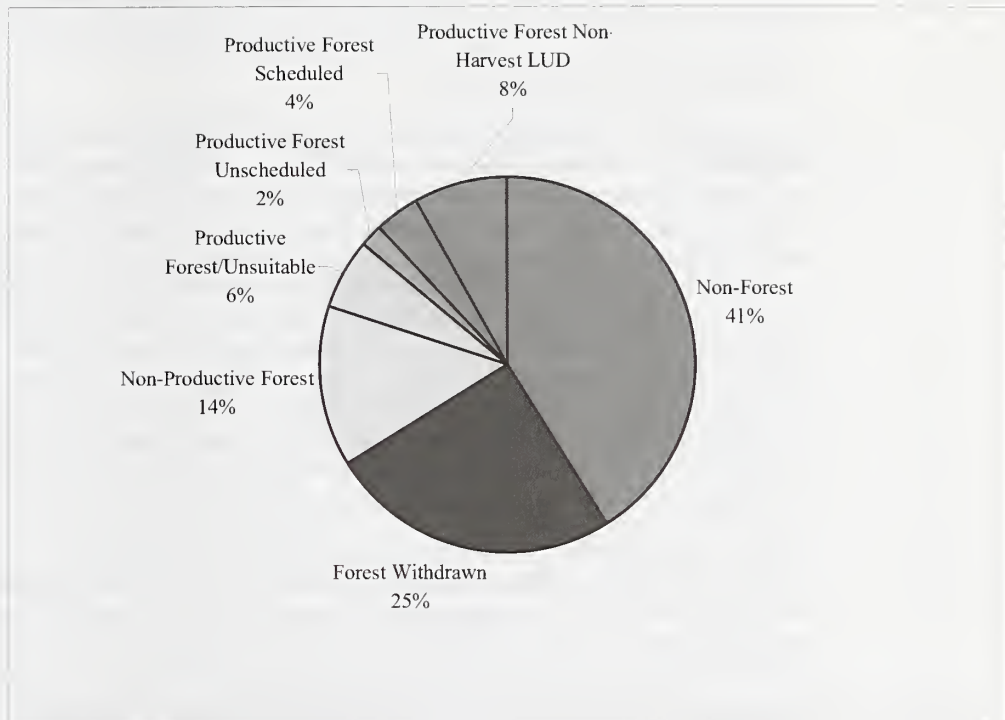
The Tongass National Forest has been unified under one Forest Supervisor. For planning and scheduling purposes, the allowable sale quantity is distributed by Ranger District. Each District has been allocated a portion of the timber harvest program based on the FORPLAN computer run and availability of suitable and available acres, to implement the Forest Plan and Section 101 of the Tongass Timber Reform Act (1990). The Forest Plan set the Forest-wide allowable sale quantity (ASQ) upper limit at 267 MMBF per year. The distribution of the planned ASQ harvest among the Districts is listed in Table A-4 (all volumes are identified as sawlog plus utility).

Historically, timber harvest has been spread across the Tongass National Forest with the long-term timber sales and mills located in Sitka and Ketchikan. The suitable timber land-base is spread across the Forest as displayed in Figure A-2. In answer to the question presented for this section of the Appendix, the suitable timber base is capable of producing the ASQ documented in the 1997 Forest Plan ROD.

Table A - 4
Distribution of ASQ Among the Tongass National Forest Ranger Districts

Tongass National Forest Ranger District	Non-Interchangeable Components	
	NIC I	NIC II
Ketchikan	32	7
Thorne Bay	42	9
Craig	33	7
Wrangell	28	6
Petersburg	50	9
Sitka	17	4
Hoonah	7	2
Juneau	7	2
Yakutat	4	1
Admiralty	0	0
NIC Totals	220	47
ASQ Total (MMBF)	267	

Figure A-2
1997 Forest Plan Timber Resource Suitability Analysis



The chart depicts the productive suitable land base that is scheduled for timber harvest activities. Four percent of the Tongass land base generates the allowable sale quantity of 267 MMBF per year. The remainder of the land, approximately ninety-six percent, is not scheduled, does not allow or will not support timber harvest activities.

Non-Forest – Land that has never supported forests, e.g. muskeg, rock, ice, etc.

Forest Withdrawn – Forest lands designated by Congress, the Sec. of Agriculture, or Chief for purposes that preclude timber harvest are classified as unsuitable, e.g. LUD Congressionally Designated Roadless Areas.

Non-productive Forest – Forest land not capable of producing crops of wood.

Productive, Non-harvest LUD – Productive forest lands that are not suited for timber production due to Forest Plan land use designation (e.g. Semi-Remote Recreation, Old-growth Habitat, etc.).

Productive Forest Unsuitable – Forest land unsuitable for timber due to physical attributes (steep slopes) and/or inadequate information to insure restocking trees (soils).

Productive Forest Scheduled – Forest land scheduled over the rotation available for timber harvest.

Productive Forest Unscheduled – Forest land that meets all the criteria for timber production availability but not scheduled for harvest over the rotation.

Source: Appendix A, 1997 Forest Plan

Appendix A

District-level Planning

The Forest Supervisor for the Tongass National Forest has discrete responsibilities for the overall management of the Forest's timber sale program. Included within these responsibilities is making the determination on the amount of timber volume to be made available to industry, as described above. Once a determination is made for the current year (annual demand) offer level, the information is presented to Congress via the Regional Forester and Chief of the Forest Service. Whether or not funding is appropriated to attain the program is the responsibility of the Congress and the President of the United States.

While the debate on funding takes place, the Tongass Forest Supervisor directs the District Rangers to formulate timber sale schedules that attain the prescribed offer level for the current year as well as develop outyear timber programs based on projected market demand for the planning cycle. District Rangers are sometimes directed to prioritize efforts in areas that are not subject to the uncertainties of pending legislation and litigation. It is the Ranger's role to recommend to the Forest Supervisor timber sale projects that meet Forest Plan goals and objectives. Districts work on various projects simultaneously resulting in continual movement of projects through the stages of the timber program pipeline. Their schedule allows the necessary time to complete preliminary analysis, resource inventories, environmental documentation, field layout preparations and permit acquisition, appraisal of timber resource values, advertisement of sale characteristics for potential bidders, bid opening, and physical award of the timber sale. Once all of the Rangers' recommendations are made and compiled into a consolidated schedule, the Forest Supervisor is responsible for the review and approval of the final plan.

Pending Congressional appropriations, the sale schedule is implemented. In the event insufficient funds or resolution to pending litigation or legislation serve to delay the desired outputs, timber sale projects are selected and implemented on a priority basis. Generally, the higher priority projects include sales where investments such as road networks, camps or log transfer facilities have already been established or where land management status is not under dispute. Those sales that are not implemented or only partially implemented are moved to the outyear. The sale schedule becomes very dynamic in nature due to the number of influences on each of the districts. A formal review of the schedule is completed annually by the Forest Supervisor in consultation with the District Rangers, and amendments are made as needed through the course of the year. The Tongass Timber Sale Plan is located on the Tongass National Forest Website, www.fs.fed.us/r10/tongass/.

The National Forest Management Act requires the Forest Service to develop timber sale schedules that encompass the life of the Forest Plan. The recent Tongass National Forest Planning process culminated in issuance of the *Forest Plan Record of Decision for the Tongass Land and Resource Management Plan*. In response to this Plan, the Tongass has prepared a Ten Year Timber Sale Schedule for Fiscal Years 2002-2012. The Fiscal Year 2003 offer level is based to the extent possible on annual market demand estimates. Planning delays attributable to resolution of the Roadless Rule and court ordered injunctions have affected this offer level. The remaining years, 2004-2012, are based on market demand projections over the planning cycle. Table A-5 denotes the first year of the ten-year plan. Fiscal Year 2003 is listed below to show the reader an example of the information available and to display the timber sales scheduled for the current fiscal year.

Table A - 5
Tongass Ten Year Timber Sale Plan-Fiscal Year 2003

NEPA Project	Decision Date	RD	Sale Name	Vol	Class	FY03	FY03
				S+U (MMBF)		Gate 3	Gate 5
Licking Creek		KMRD	Licking Creek	16.8	S	12.0	12.0
Licking Creek		KMRD	Licking Creek South	4.8	S	4.8	4.8
Boundary (H.L.)		KMRD	Boundary	3.0	S	3.0	3.0
Mop Pt/91 Knot		KMRD	91-Knot Reoffer	0.5	S	0.5	0.5
◇		CRD	Dr. Point	16.0	S	16.0	16.0
◇		CRD	Skowl	7.0	S	7.0	7.0
Craig Small Sales		CRD	Various Small Sales	0.5	S	0.5	0.5
◇		CRD	Sunny (FY99 Sale)	7.0	S	7.0	7.0
◇		CRD	Cher (FY99 Sale)	5.0	S	5.0	5.0
Chasina EIS		CRD	Johnston Mtn. (FY01 Sale)	5.9	S	0.5	5.9
TNB Small Sales EA		TNB	Various Small Sales	3.0	S	3.0	3.0
Roadside EA		TNB	Small Sales	2.0	S	2.0	2.0
Roadside EA		TNB	Small Sales	2.0	S	2.0	2.0
Lab Bay EIS	Jan 97	TNB	Thorne Island	3.5	S	0.5	3.5
Luck Lake	Jun 00	TNB	Luck Lake (FY 00)		O		8.0
Control Lake EIS	May 98	TNB	Mad Rush (FY 01)		O		5.3
Heceta Second Growth		TNB	Heceta CT	8.0	S	8.0	8.0
Couverden		JRD	Homesore	25.0	S	15.0	15.0
HRD Small Sales		HRD	Small Sales	0.4	S	0.4	0.4
Yakutat Salvage EA		YRD	Yakutat Salvage	10.0	S	10.0	10.0
Scott Peak EIS		PRD	Sherman Peak	12.0	S	8.0	8.0
Woodpecker	Proposal	PRD	Woodbine (Unit 187)	0.1	S	0.1	0.1
Woodpecker	Proposal	PRD	Woodchuck (Unit 161A)	0.2	S	0.2	0.2
Twin Creek EA		PRD	Frenchy 99		S		1.0
South Lindenberg EIS	Dec 96	PRD	Redo		S	5.0	5.0
Threemile		PRD	Threemile	20.0	S	20.0	20.0
South Lindenberg	Dec 96	PRD	Short Run		S	1.0	1.0
Doughnut EA	Apr 00	WRD	Doughnut		S		3.4
Skipping Cow EIS	Apr 00	WRD	Skipping Cow Reoffer		S		31.0

* These NEPA documents are in-progress and may or may not have an action alternative selected and may or may not be completed this year due to delays due to legislation or litigation. Volumes displayed are for planning purposes only and do not constitute a decision. The Ten Year Schedule provides a significant amount of information and is described as follows:

Appendix A

NEPA Project: Environmental document project name. This name may or may not differ from the timber sale project name depending on how many sales originate from the original NEPA document.

Decision Date: The date of the decision document, whether planned or actual. “*” Denotes project has started and completion is within the Fiscal Year but a specific date (e.g., month) is not firm.

RD: Ranger district office where project is located (PRD=Petersburg Ranger District).

Sale Name: Timber sale project name. FY 00 or FY 01 designates that this timber sale was originally planned to be sold in fiscal year 2000 or 2001, but due to late NEPA decisions, personnel going to lower 48 states’ fires, and other delays caused the timber sale to be advertised late and sold early in FY 2001. The timber sale may also have been advertised and unsold and the sale is now planned to be reoffered.

Vol S+U (MMBF): Possible timber volume (sawlog plus utility) that could result if an action alternative is selected from the NEPA document. Generally only appears once in the year the decision is made. If no volume is shown, decision on document was made in another fiscal year.

Class: Timber sale size class determination (S=SBA, O=open sale to all bidders).

FY02 Gate 3 (Layout): Only appears in fiscal year sale is to be laid out and appraised. May appear in more than one year.

FY02 Gate 5 (Offer): Only appears in fiscal year sale is to be offered. Number designates potential volume.

The location of timber sale projects are based on the land allocation directed in the Forest Plan decision. Timber sales are located where permitted based on the prescriptions and objectives of the land use designation. Timber sale projects are located to varying degrees in land use designations identified as Timber Production, Modified Landscape, and Scenic Viewshed.

As stated earlier, the District Ranger is responsible for identifying and recommending the project areas for the Ten Year Timber Sale Schedule. The considerations the Ranger makes on each project includes but are not limited to the following.

- The project area contains a sufficient number of acres allocated to development land use designations to make timber harvest in the area appropriate under the Forest Plan. There is an adequate amount of suitable and available land for timber harvest opportunities. Available information indicates harvest of the amount of timber volume being considered for this project can occur consistent with the Forest Plan standards and guidelines and other resource protection requirements.
- The project and proposed timber harvest volume can contribute to achieving the goals and objectives of implementing the Forest Plan.
- The potential investment in infrastructure (roads, bridges, log transfer facilities, camps, rock pits, etc.) is necessary for sustainable timber harvest offerings. Where infrastructure already exists, this project will enable maintenance and upgrade of the facilities, which is necessary for removal of timber volume.
- The potential effects on subsistence and other resources.
- Based on current year and anticipated outyear timber volume demand; volume currently under contract; anticipated Congressional allocations; and the availability of resources to fully prepare and offer this project for sale, this project is consistent with and meets all laws and regulations. These laws and regulations include Forest Service Policy; Best Management Practices; the Forest Plan; and all other laws and regulations governing the removal of timber from National Forest System lands.

How Does This Project Fit into the Tongass Timber Program?

The Finger Mountain Timber Sale(s) Project was proposed for offer beginning in Fiscal Year 2004 (Tongass National Forest Ten Year Timber Sale Schedule, approved by Thomas Puchlerz, Forest Supervisor, September 30, 2002). A court injunction delaying this decision has recently been lifted allowing the project to move forward. This ten-year schedule is revised at the end of each fiscal year. The next revision will account for this injunction and for development LUDs currently restricted under the Roadless Rule. Forest-wide, total volume that will be available for offer in Fiscal Year 2003 is approximately 84.6 MMBF. This figure is just short of over half of the projected demand. The Finger Mountain Timber Sale(s) Project, which is exempt from the prohibitions of the Roadless Rule, will be scheduled as soon as planning can be completed. The Finger Mountain project is currently in Gate 2, "Volume Under Analysis." The project's action alternatives being addressed in the NEPA analysis range from approximately 4 MMBF to 21 MMBF that could contribute to the Tongass Timber Sale Program. As described earlier, the volume of timber needed to maintain this Pool is 413 MMBF. Currently, forest-wide, Pool 1 contains from 162.6 MMBF to 187.4 MMBF inclusive of this project. Therefore, the Finger Mountain project is consistent with program planning objectives and is necessary to meet the goal of providing an orderly flow of timber from the Tongass on a sustained yield basis. Given the included information, it is reasonable to be conducting the environmental analysis for this project at this time.

Why Can't This Project Occur Somewhere Else?

As previously discussed, the market demand for timber for the next 10 years is expected to average 168.7 MMBF per year. The suitable and available land base on the Tongass is capable of supporting an Allowable Sale Quantity of 267 MMBF annually, 220 MMBF of which is considered economical (i.e., the NIC I component). Based on the projected market demand for the planning cycle, all suitable timberlands will eventually be scheduled for harvest to meet the current and projected demand for raw material in Southeast Alaska. The relocation of this project to another area is inefficient and potentially contrary to the standards and guidelines of the Forest Plan. This decision is based on the cumulative impact on other resources from past harvest activities, the location of timber sales under contract, and the eventual use of all suitable lands for timber sale projects.

- Areas with available timber will be necessary to consider for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).
- The potential effects on subsistence resources are projected to differ little based on the sequence in which these areas are harvested. Harvesting other areas with available timber on the Tongass National Forest is expected to have similar potential effects on resources, including those used for subsistence, because of widespread distribution of subsistence use and other factors. Harvest within other areas is foreseeable, in any case over the forest-planning horizon under the Forest Plan.

Appendix A

- Providing substantially less timber volume than required to meet Forest Plan and TTRA Section 101 timber supply and employment objectives in order to avoid harvest in the project area is not necessary or reasonable.

It is reasonable to schedule harvest in the project area rather than in other areas at the present time based on previous harvest entry and access, level of controversy over subsistence and other effects, the ability to complete the NEPA process and make timber available to meet the needs of dependent industries. Other areas that are reasonable to consider for harvest in the near future are the subjects of other project EISs that are currently ongoing or scheduled to begin soon.

Appendix B

Unit Cards and Harvest Unit Details Tables

Summary

... of the ...
... of the ...

Appendix B

Unit Cards and Harvest Unit Details Tables

Introduction

This appendix is comprised of harvest unit summary tables for each action alternative considered in this FEIS and the unit cards and maps for each harvest unit

The unit cards provide a summary of the information about the individual proposed harvest units that are included in one or more alternatives. They portray site-specific information such as additional mitigation and observations. They also indicate where further assistance will be needed during field layout. The unit cards reflect the desirable condition of the final unit as developed through the interdisciplinary process. They also provide the reviewer with an opportunity to compare the units.

Unit cards are used in conjunction with the silvicultural prescriptions to aid the field implementation personnel in obtaining the desired objectives as developed by the interdisciplinary team and as selected in the Record of Decision.

Depictions of steep slope areas are derived from Geographic Information System (GIS) data. The Steep Slope Analysis is found in the Project Record. The report contains an explanation of field-verified acre differences and suitability calls.

Resource data listed on the unit cards are divided into the following sections: vegetation, streamcourse protection, soils, wildlife, visuals, and heritage. The resource data consist of general information and a list of mitigation measures and/or layout concerns if required or noted during resource review.

The Integrated Harvest Prescriptions section of the unit cards contains recommended treatments for harvest units. Silvicultural systems have been developed to meet the management objectives based on the site and Forest Plan direction.

Table B – 1
Unit Summary Table: Alternative B

VCU ¹	Unit #	Total Unit Acres	Harvested Acres	Harvested Volume (MBF)	Available Volume Harvested ²	Yarding System	Silvicultural Prescription	Management System ³
230	1520	6	6	66	100%	cable	clearcut	even-aged
230	1521	4	4	56	100%	cable	clearcut	even-aged
230	1522	7	7	88	100%	cable	clearcut	even-aged
230	1540	27	23	297	86%	cable	clearcut w/res	even-aged
230	1550	23	23	383	100%	cable	clearcut	even-aged
230	1552	10	10	144	100%	cable	clearcut	even-aged
230	1590A	29	29	677	100%	cable	clearcut	even-aged
230	1590B	36	35	721	97%	cable	clearcut w/res	even-aged
230	1593B	32	31	612	99%	cable	clearcut	even-aged
230	1620	26	22	829	85%	cable	clearcut w/res	even-aged
230	1650	67	65	1392	96%	cable	clearcut w/res	even-aged
230	1660	17	17	375	99%	cable	clearcut	even-aged
230	1670	22	21	431	93%	cable	clearcut w/res	even-aged
230	1720	24	23	437	93%	cable	clearcut w/res	even-aged
230	1730	5	4	150	84%	cable	clearcut w/res	even-aged
230	1731	12	11	322	83%	cable	clearcut w/res	two-aged
230	1750A	7	6	153	64%	cable	overstory removal	two-aged
230	1750B	19	18	444	96%	cable	clearcut w/res	even-aged
230	1770	38	37	834	97%	cable	clearcut w/res	even-aged
230	1780	18	17	387	94%	cable	clearcut w/res	even-aged
234	1810	32	27	414	78%	cable	clearcut w/res	even-aged (63%) two-aged (37%)
234	1811	26	18	416	70%	cable	clearcut w/res	even-aged
234	1820	55	55	1547	93%	cable	clearcut w/res	even-aged (34%) two-aged (66%)
234	1830	26	18	230	69%	cable	clearcut w/res	even-aged (70%) two-aged (30%)
234	1850	53	48	1488	87%	cable	clearcut w/res	even-aged (46%) two-aged (54%)
234	1852	25	25	599	100%	cable	clearcut	even-aged
234	1853	39	38	1100	93%	cable	clearcut w/res	even-aged (70%) two-aged (30%)
233	1973	36	31	485	85%	cable	clearcut w/res	even-aged
233	1976	30	27	517	89%	cable	clearcut w/res	even-aged
233	1977	22	20	445	92%	cable	clearcut w/res	even-aged
233	1980	59	53	722	63%	cable	clearcut w/res	even-aged
233	1981	53	48	1392	81%	cable	clearcut w/res	even-aged
233	1992	41	40	899	93%	cable	clearcut w/res	even-aged
233	2030	21	20	462	95%	cable	clearcut w/res	even-aged
233	2040A	10	10	181	52%	cable	clearcut w/res	two-aged
233	2040B	70	49	1713	69%	cable	clearcut w/res	even-aged
Total		1,027	936	21,408				

¹ Unit cards are located in Appendix B of the Finger Mountain Timber Sale(s) FEIS.

² Available Volume Harvested = Total Unit Volume divided by Harvest Volume (refer to the Unit Cards that follow for Total Unit Volume data).

³ For units in which more than one management system is prescribed, this column displays the proportion of land on which each system will be applied.

Table B – 2
Unit Summary Table: Alternative D

VCU	Unit #	Total Unit Acres	Harvested Acres	Harvested Volume (MBF)	Available Volume Harvested ¹	Yarding System	Silvicultural Prescription	Management System ²
230	1440	24	23	296	100%	cable	clearcut	even-aged
230	1450	23	23	393	100%	cable	clearcut	even-aged
230	1551	19	18	226	90%	cable	clearcut w/res	even-aged
230	1560	29	29	607	96%	cable	clearcut w/res	even-aged
230	1570	15	15	193	100%	cable	clearcut	even-aged
230	1572	43	39	462	81%	cable	clearcut w/res	even-aged (60%) two-aged (40%)
230	1590B	36	35	721	97%	cable	clearcut w/res	even-aged
230	1593B	32	32	612	99%	cable	clearcut	even-aged
230	1610	27	17	336	62%	cable	clearcut w/res	even-aged
230	1620	26	23	829	85%	cable	clearcut w/res	even-aged
230	1640	54	50	1000	87%	cable	clearcut w/res	even-aged (72%) two-aged (28%)
230	1680	59	55	1152	93%	cable	clearcut w/res	even-aged
234	1801	15	15	327	100%	cable	clearcut	even-aged
234	1802	22	16	310	72%	cable	clearcut w/res	even-aged
234	1803A	7	7	140	100%	cable	clearcut	even-aged
234	1803B	1	1	28	100%	cable	clearcut	even-aged
234	1804	22	17	423	79%	cable	clearcut w/res	even-aged
234	1805H	50	48	592	48%	helicopter	50% selection	uneven-aged
234	1810	32	27	414	78%	cable	clearcut w/res	even-aged (63%) two-aged (37%)
234	1812	26	25	460	46%	cable	clearcut w/res	two-aged
234	1813	4	4	33	40%	cable	40% selection	uneven-aged
234	1813H	34	23	226	27%	helicopter	40% selection	uneven-aged
234	1815H	50	49	482	39%	helicopter	40% selection	uneven-aged
234	1820	55	55	1547	93%	cable	clearcut w/res	even-aged (34%) two-aged (66%)
233	1951H	7	6	138	85%	helicopter	clearcut w/res	even-aged
233	1952H	54	48	817	80%	helicopter	clearcut w/res	even-aged (57%) two-aged (43%)
233	1973	36	31	485	85%	cable	clearcut w/res	even-aged
233	1976	30	27	517	89%	cable	clearcut w/res	even-aged
233	1977	22	20	445	92%	cable	clearcut w/res	even-aged
233	1980	59	53	722	63%	cable	clearcut w/res	even-aged
233	1983	8	7	97	97%	cable	clearcut w/res	even-aged
233	1984	17	15	365	85%	cable	clearcut w/res	even-aged
233	1985	14	14	380	95%	cable	clearcut w/res	even-aged
233	1990B	22	18	285	73%	cable	clearcut w/res	two-aged
233	1992	41	40	899	93%	cable	clearcut w/res	even-aged
233	2000	16	16	409	92%	cable	clearcut w/res	two-aged
233	2021	16	16	92	25%	helicopter	25% selection	uneven-aged
233	2030	21	20	462	95%	cable	clearcut w/res	even-aged
233	2040A	10	10	181	52%	cable	clearcut w/res	two-aged
233	2040B	70	49	1713	69%	cable	clearcut w/res	even-aged
Total		1,148	1,036	19,816				

¹ Available Volume Harvested = Total Unit Volume divided by Harvest Volume (refer to the Unit Cards that follow for Total Unit Volume data).

² For units in which more than one management system is prescribed, this column displays the proportion of land on which each system will be applied.

Table B – 3
Unit Summary Table: Alternative F

VCU	Unit #	Total Unit Acres	Harvested Acres	Harvested Volume (MBF)	Available Volume Harvested ¹	Yarding System	Silvicultural Prescription	Management System ²
234	1801	15	15	164	50%	cable	clearcut w/res	two-aged
234	1802	22	16	155	36%	cable	small strip cuts	two-aged
234	1803A	7	7	140	100%	cable	clearcut	even-aged
234	1803B	1	1	20	70%	cable	70% selection	even-aged
234	1804	22	17	212	39%	cable	small strip cuts	two-aged
234	1805H	50	48	592	48%	helicopter	50% selection	uneven-aged
234	1810	32	27	414	78%	cable	clearcut w/res	even-aged (63%) two-aged (37%)
234	1812	26	25	460	46%	helicopter	50% selection	two-aged
234	1813	4	4	33	40%	cable	40% selection	uneven-aged
234	1813H	34	23	226	27%	helicopter	40% selection	uneven-aged
234	1815H	50	49	482	39%	helicopter	40% selection	uneven-aged
234	1820	55	55	1547	93%	cable	clearcut w/res	even-aged (34%) two-aged (66%)
233	1950H	24	22	183	44%	helicopter	50% selection	uneven-aged
233	1951H	7	6	75	46%	helicopter	50% selection	uneven-aged
233	1952H	54	48	446	44%	helicopter	50% selection	uneven-aged
233	1970	51	51	391	50%	helicopter	50% selection	uneven-aged
233	1971	32	17	186	27%	helicopter	50% selection	uneven-aged
233	1973	36	31	242	42%	helicopter	50% selection	uneven-aged
233	1976	30	27	259	45%	helicopter	50% selection	uneven-aged
233	1977	22	20	222	46%	helicopter	50% selection	uneven-aged
233	1980	59	53	722	63%	cable	clearcut w/res	even-aged
233	1983	8	7	97	97%	cable	clearcut w/res	even-aged
233	1984	17	14	365	85%	cable	clearcut w/res	even-aged
233	1985	14	14	380	95%	cable	clearcut w/res	even-aged
233	1990B	22	18	285	73%	cable	clearcut w/res	two-aged
233	1992	41	40	898	93%	cable	clearcut w/res	even-aged
233	2000	16	16	409	92%	cable	clearcut w/res	two-aged
233	2021	16	16	92	25%	helicopter	25% selection	uneven-aged
233	2030	21	20	116	24%	helicopter	25% selection	uneven-aged
233	2030H	15	15	89	25%	helicopter	25% selection	uneven-aged
233	2040A	10	10	86	25%	helicopter	25% selection	uneven-aged
233	2040B	70	49	428	17%	helicopter	25% selection	uneven-aged
233	6054H	16	14	152	45%	helicopter	50% selection	uneven-aged
233	6055H	21	21	237	48%	helicopter	50% selection	uneven-aged
233/234	6047	11	11	77	25%	helicopter	25% selection	uneven-aged
Total		931	827	10,882				

¹ Available Volume Harvested = Total Unit Volume divided by Harvest Volume (refer to the Unit Cards that follow for Total Unit Volume data).

² For units in which more than one management system is prescribed, this column displays the proportion of land on which each system will be applied.

Table B – 4
Unit Summary Table: Alternative H

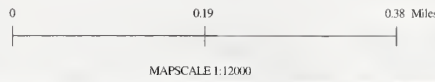
VCU	Unit #	Total Unit Acres	Harvested Acres	Harvested Volume (MBF)	Available Volume Harvested ¹	Yarding System	Silvicultural Prescription	Management System
234	1802	22	16	155	36%	cable	small strip cuts	two-aged
234	1803A	7	7	140	100%	cable	clearcut	even-aged
234	1803B	1	1	20	70%	cable	70% selection	even-aged
234	1804	22	17	212	39%	cable	small strip cuts	two-aged
233	1980	59	53	722	63%	cable	clearcut w/res	even-aged
233	1983	8	7	97	97%	cable	clearcut w/res	even-aged
233	1984	17	14	365	85%	cable	clearcut w/res	even-aged
233	1985	14	14	380	95%	cable	clearcut w/res	even-aged
233	1990B	22	18	285	73%	cable	clearcut w/res	two-aged
233	1992	41	40	898	93%	cable	clearcut w/res	even-aged
233	2000	16	16	409	92%	cable	clearcut w/res	two-aged
233	2030	21	20	462	95%	cable	clearcut w/res	even-aged
Total		250	223	4,145				

¹ Available Volume Harvested = Total Unit Volume divided by Harvest Volume (refer to the Unit Cards that follow for Total Unit Volume data).

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1440 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 23 Unit 1440 Occurs in Alternatives: D



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1440****Area: Inbetween****Total Unit Acres - 24****Harvest Acres - 23****Total Unit Volume (MBF) – 296****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	100	296	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is 70% cedar, 20% western hemlock and 10% spruce. Trees are uniform in size with good form. Good amount of poles and saplings, mostly cedar. Plant association is western hemlock/cedar - blueberry. Windthrow hazard is low.

Streamcourse Protection - Protect any Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - Feather edges to reduce rectangular and linear appearance.

Heritage - none

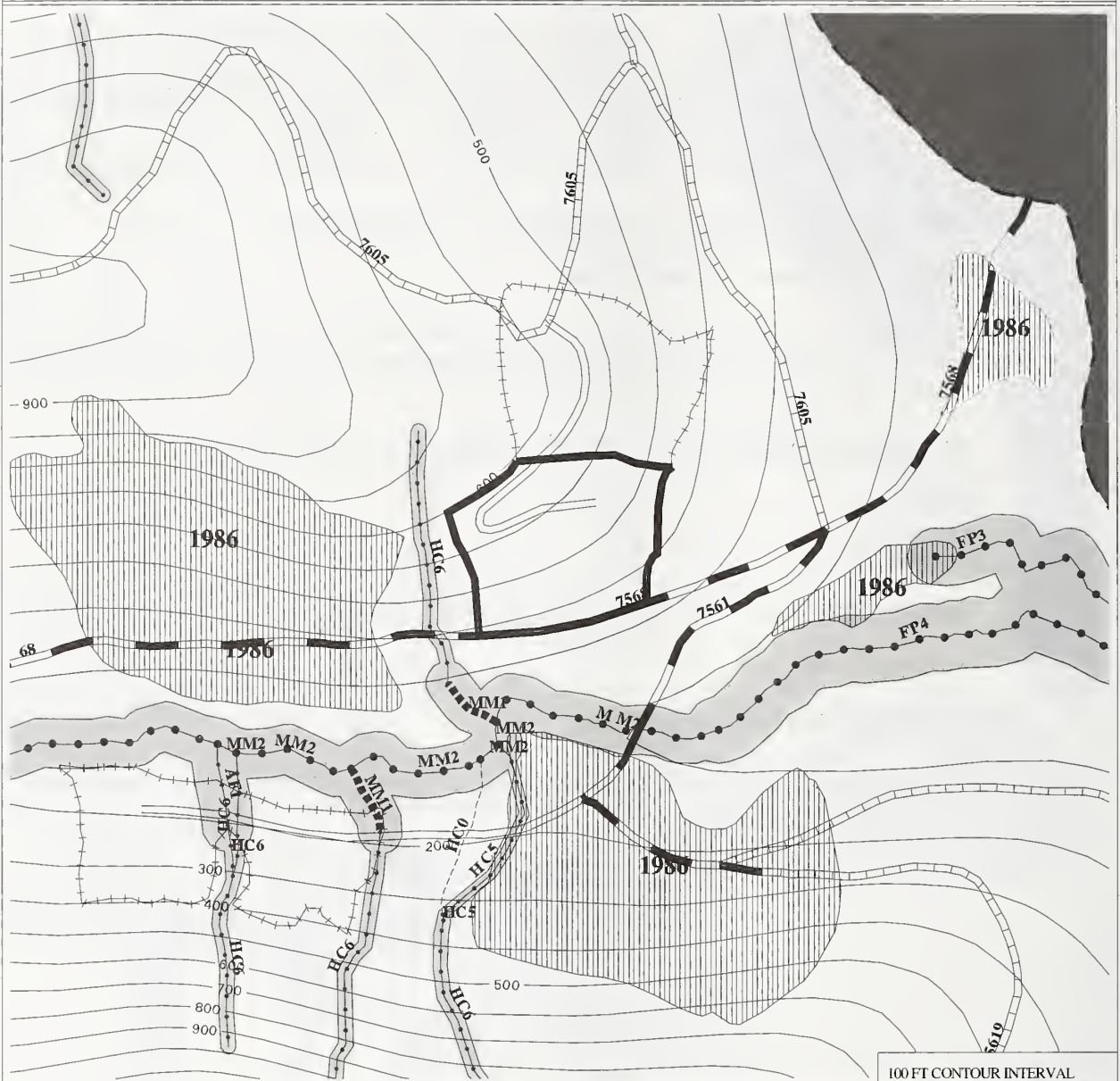
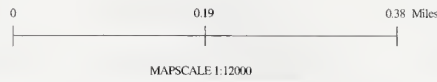
III. Integrated Harvest Prescription

Alternative D - the recommended treatment is clearcut. Feather edges to reduce the visual impact. The yarding system is a running skyline off a temporary road.

Resource review completed by: B. Beall, S.P. Beall, and B.T. Brigham 8/97.
--

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1450 QUAD(s): SITD5SE
TOTAL UNIT ACRES: 23 Unit 1450 Occurs in Alternatives: D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1450****Area: Inbetween****Total Unit Acres - 23****Harvest Acres - 23****Total Unit Volume (MBF) – 393****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	100	393	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is comprised of 60% western hemlock, 35% cedar, and 5% spruce. On the slope, the trees are large (14 to 83" dbh) and there is some spruce. Mistletoe is heavy and there is some pinicola. There are a few inclusions of old blowdown that have filled in with uniform western hemlock, 14" dbh. The upper slope contains mostly cedar and spruce. They are of a smaller diameter (22"), but fewer defects. The top of the unit is mainly cedar averaging 14" dbh and 70 ft. tall. There is little regeneration. The plant association is western hemlock/cedar- blueberry. The windthrow hazard is moderate.

Streamcourse Protection - Do not expand unit on W side to encroach on the unstable (recent debris torrent/slide) Class III channel near W boundary (near old clearcut). Protect this Class III channel as outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16. Protect Class IV, category C streams as per BMP 13.16.

Soils – none

Wildlife - none

Visuals - Feather edges to reduce rectilinear appearance.

Heritage - none

III. Integrated Harvest Prescription

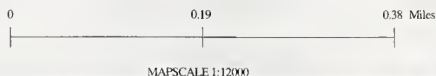
Alternative D - The recommended treatment is clearcut. Feather the boundaries to minimize visual impact. The yarding system is a running skyline off a temporary road.

Resource Review Completed By: S.P. Beall, B.T. Brigham, G.M. Killinger 6/17/97; B. Beall & crew 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1520 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 5 Unit 1520 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1520****Area: Inbetween****Total Unit Acres - 6 Harvest Acres - 6 Total Unit Volume (MBF) – 66****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	66	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Stand is hemlock/cedar with some spruce. Cedar showing some decline but defect across stand is generally low. Saplings and poles are scattered. Heavy brush and shallow soils on higher slopes precludes seedlings. *Vaccinium* spp. cover is 40% to 70%, with some salmonberry in wet areas and minor amounts of rusty Menziesia. Plant association is western hemlock/cedar-blueberry/skunk cabbage. Average site index is 64. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of smaller, Class I and II, category A stream near lower N unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Protect any Class IV, category C streams as per BMP 13.16.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

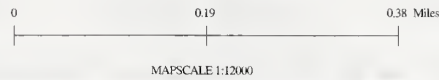
Alternative B - The recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource review completed by: Godfrey & crew 8/94; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1521 QUAD(s): SITD5SW/SITD5SE
 TOTAL UNIT ACRES: 4 Unit 1521 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1521****Area: Inbetween****Total Unit Acres - 4 Harvest Acres - 4 Total Unit Volume (MBF) – 56****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	56	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Stand is hemlock/cedar with some spruce. Cedar showing some decline but defect across stand is generally low. Saplings and poles are scattered. Heavy brush and shallow soils on higher slopes precludes seedlings. *Vaccinium* spp. cover is 40% 70%, with some salmonberry in wet areas and minor amounts of rusty Menziesia. Plant association is western hemlock/cedar-blueberry/skunk cabbage. Average site index is 66. Windthrow hazard is moderate.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place W unit boundary at or above slope break of Class III, category B stream.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

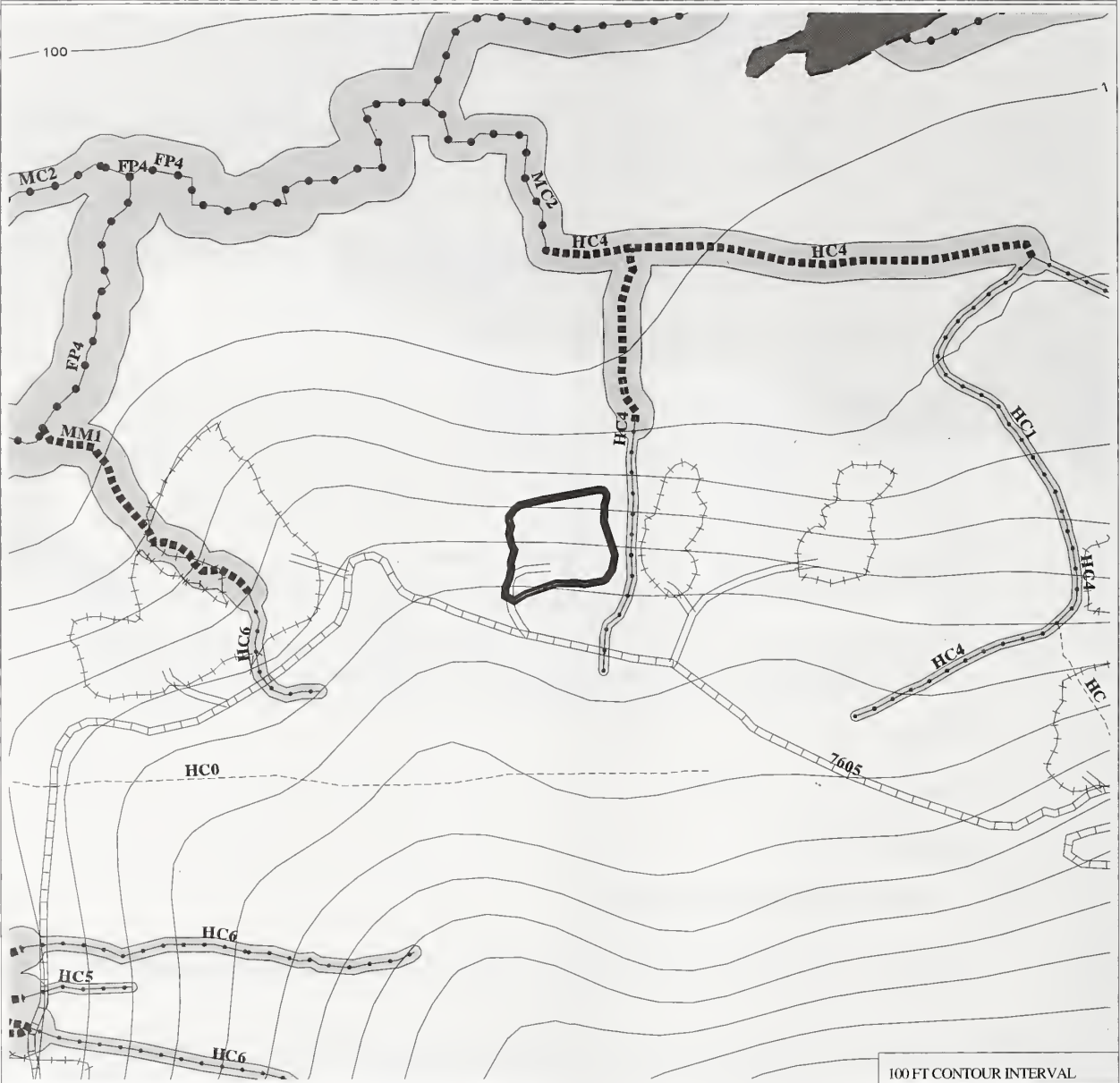
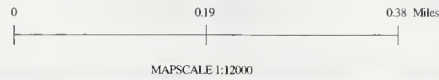
III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource review completed by: Godfrey & crew 8/94; S.A. Jacobson 8/27/97; W.R. Dougan, S.A. Godfrey.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1522 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 7 Unit 1522 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1522****Area: Inbetween****Total Unit Acres - 7 Harvest Acres - 7 Total Unit Volume (MBF) – 88****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	88	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Stand is hemlock/cedar with some spruce. Cedar showing some decline but defect across stand is generally low. Saplings and poles are scattered. Heavy brush and shallow soils on higher slopes precludes seedlings. *Vaccinium* spp. cover is 40% to 70%, with some salmonberry in wet areas and minor amounts of rusty Menziesia. Plant association is western hemlock/cedar-blueberry/skunk cabbage. Average site index is 63. Windthrow hazard is moderate.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place E unit boundary at or above slope break of Class III, category B stream.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

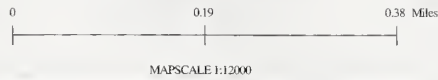
III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource Review Completed By: Godfrey & crew 8/94; S.A. Jacobson 8/27/97; W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1540 QUAD(s): SITD5SW
TOTAL UNIT ACRES: 27 Unit 1540 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1540****Area: Inbetween****Total Unit Acres - 27 Harvest Acres - 23 Total Unit Volume (MBF) – 345****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	86	297	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Resource Descriptions**

Vegetation - The stand is comprised mainly of western hemlock, with occasional Sitka spruce. The stand is very decadent and has heavy mistletoe. It is well stocked with pole and saplings and contains scattered seedlings. Plant associations are western hemlock/cedar-blueberry and western hemlock-blueberry. *Vaccinium* spp. cover is 20% to 50%. Some devil's club and rusty Menziesia are present. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A stream (MM1 channel) in center of unit as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). This stream becomes Class III in uphill area of unit. As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B stream. Protect any Class IV, category C streams as per BMP 13.16.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Recommended treatment is clearcut with reserves. The reserves are maintained for streamcourse protection. They are located in a buffer directly adjacent to the stream and just beyond the buffer in the wind management zone designed to protect the buffer from blowdown. See Streamcourse Protection notes above for location and extent of streamside buffers. May need to plant cedar and spruce to maintain species diversity. The yarding system is a live skyline off two temporary roads.

Resource review completed by: S.A. Jacobson 8/27/97; W.R. Dougan.

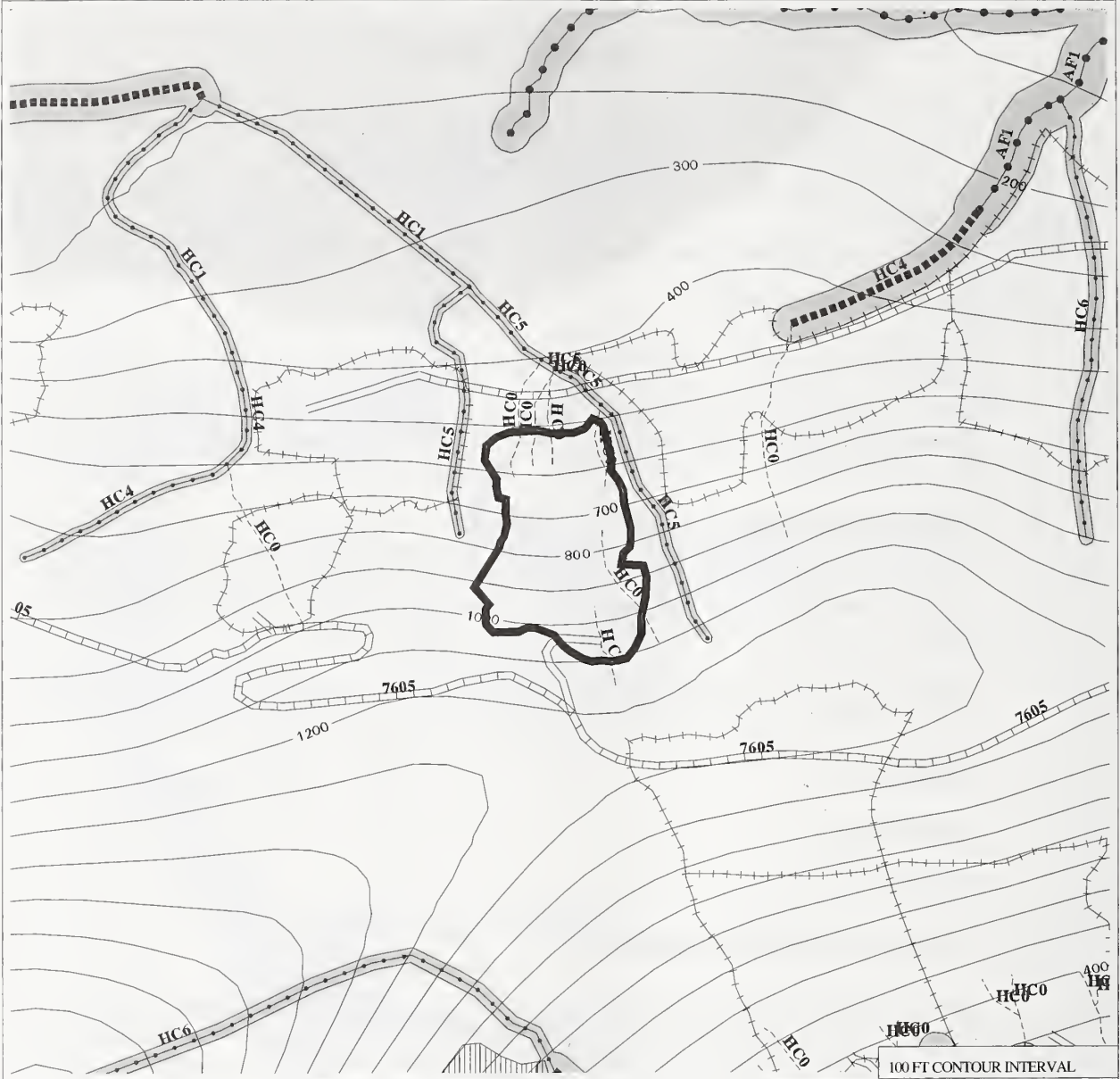
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1550 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 23 Unit 1550 Occurs in Alternatives: B

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1550****Area: Inbetween****Total Unit Acres - 23****Harvest Acres - 23****Total Unit Volume (MBF) – 384****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	384	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The unit is a mixed conifer forest type, predominantly western hemlock and cedar, with smaller amounts of spruce and mountain hemlock. Size classes are highly variable with small amounts of saplings and poles in canopy openings. Plant associations are mixed conifer-blueberry and mixed conifer-skunk cabbage. *Vaccinium* spp. cover is 30% to 70% with small amounts of rusty Menziesia. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams along lower unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B streams located along the E and W boundaries. Windthrow hazard is not high, but where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Recommended treatment is clearcut. The yarding system is a slackline off a temporary road.

Resource Review Completed By: W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1551 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 19 Unit 1551 Occurs in Alternatives: D

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1551****Area: Inbetween****Total Unit Acres - 19****Harvest Acres - 18****Total Unit Volume (MBF) – 251****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	90	226	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The unit is a mixed conifer forest type, predominantly western hemlock and cedar, with smaller amounts of spruce and mountain hemlock. Size classes are highly variable also with small amounts of saplings and poles in canopy openings. Plant association is mixed conifer-blueberry and mixed conifer-skunk cabbage. *Vaccinium* spp. cover is 30% to 70% with small amounts of rusty Menziesia. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams along lower unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B streams located along the E and W boundaries. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure that partial suspension is maintained in order to minimize damage to shallow soils on small cliffs and steep areas that occur throughout the unit.

Wildlife - none

Visuals - none

Heritage - none

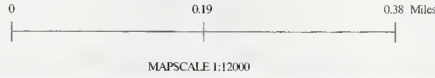
III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut with reserves. Retain 30% of the volume in the smaller diameter classes in the wind management zones along the Class III streams (refer to Streamcourse Protection notes above). The yarding systems are running skyline and slackline off a temporary road.

Resource review completed by: W.R. Dougan, Timber.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1552 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 10 Unit 1552 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1552****Area: Inbetween****Total Unit Acres - 10****Harvest Acres - 10****Total Unit Volume (MBF) – 144****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	144	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The unit is a mixed conifer forest type, predominantly western hemlock and cedar, with smaller amounts of spruce and mountain hemlock. Size classes are highly variable also with small amounts of saplings and poles in canopy openings. Plant association is mixed conifer-blueberry and mixed conifer-skunk cabbage. *Vaccinium* spp. cover is 30% to 70% with small amounts of rusty Menziesia. Windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC4 channel located near the NW boundary. Protect incised HC0 stream in center of unit identified as larger Class IV, category C stream as per BMP 13.16. This stream likely will require split yarding, at least in the lower unit area.

Soils - Shallow soil, small cliffs, and steep areas occur throughout the unit. Partial log suspension during yarding is required throughout the unit in order to minimize soil disturbance.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource review completed by: W.R. Dougan.
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A horizontal number line with three tick marks. The first tick mark is labeled '0'. The second tick mark is labeled '0.19'. The third tick mark is labeled '0.38 Miles'.

This topographic map illustrates the study area with contour lines indicating elevation. The map includes several labeled features: HC1, HC2, HC3, HC4, HC5, HC6, HC7, HC8, HC9, HC10, HC11, HC12, HC13, HC14, HC15, HC16, HC17, HC18, HC19, HC20, HC21, HC22, HC23, HC24, HC25, HC26, HC27, HC28, HC29, HC30, HC31, HC32, HC33, HC34, HC35, HC36, HC37, HC38, HC39, HC40, HC41, HC42, HC43, HC44, HC45, HC46, HC47, HC48, HC49, HC50, HC51, HC52, HC53, HC54, HC55, HC56, HC57, HC58, HC59, HC60, HC61, HC62, HC63, HC64, HC65, HC66, HC67, HC68, HC69, HC70, HC71, HC72, HC73, HC74, HC75, HC76, HC77, HC78, HC79, HC80, HC81, HC82, HC83, HC84, HC85, HC86, HC87, HC88, HC89, HC90, HC91, HC92, HC93, HC94, HC95, HC96, HC97, HC98, HC99, HC100. The map also shows a network of roads and a drainage system. A scale bar at the bottom right indicates a 100 FT CONTOUR INTERVAL.

Finger Mountain Planning Area**VCU: 230****Unit: 1560****Area: Inbetween****Total Unit Acres - 29****Harvest Acres - 29****Total Unit Volume (MBF) – 634****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	96	607	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Overstory Description: All parts of this proposed unit are dominated by western hemlock in the overstory. The dominant associations are the western hemlock/blueberry and western hemlock/blueberry/devil's club. Western hemlock-yellow cedar/blueberry and western hemlock-yellow cedar/*Menziesia* spp. are found in the NW portion. This NW area has a more open canopy and more brush in the understory. Some of the cedar in this area is fair #2 saw. Trees are well distributed in size classes with tree crowns in all canopy positions. The windthrow hazard is estimated as moderate. Understory Description: Hemlock regeneration is prolific in canopy gaps with some vigorous, well-formed hemlock saplings and poles in older canopy gaps. A couple canopy gaps are occupied by brush/alder. Shield fern is common but less than 3% cover overall. Devil's club cover is approximately 35% on east half of unit.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams (including HC4 channel) along and within lower unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B streams located along the W boundary and possibly in center of unit. Identified Class IV, HC0 channel in center of unit needs to be verified as potential Class III channel. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

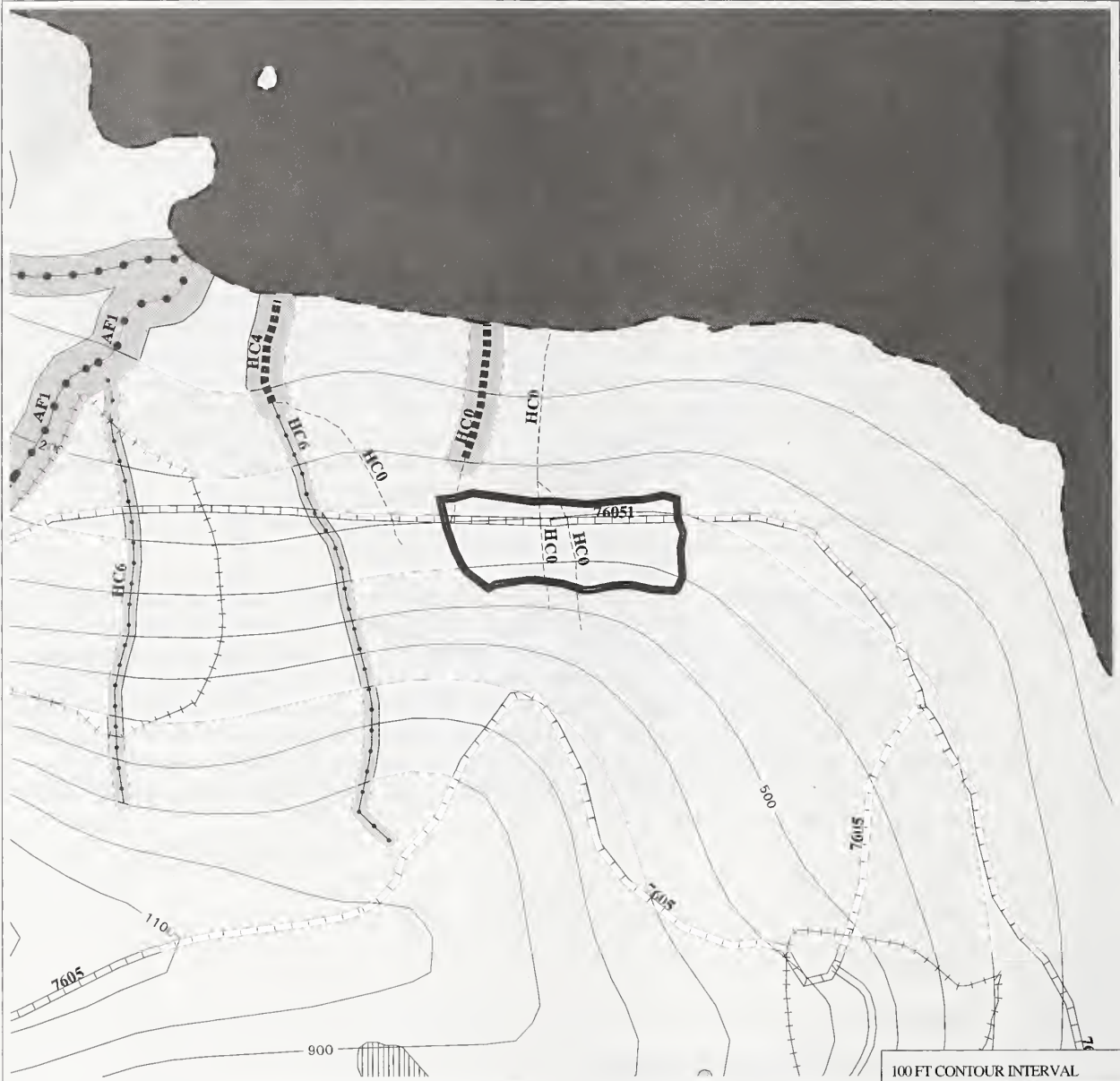
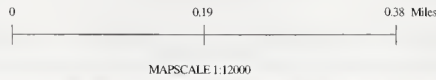
Soils - none**Wildlife** -none**Visuals** -none**Heritage** - none**III. Integrated Harvest Prescription**

This unit is included only in Alternative D. The recommended harvest method is clearcut with reserves. Reserves should be made of unmerchantable trees where that can be done safely and some seed producing cedar should be reserved in the northeast area to promote cedar regeneration. Consider hand planting NE area with yellow cedar to promote cedar component on this hemlock-yellow cedar site. The yarding systems are running skyline and swing along Road 76051.

Resource review completed by: B. Beall & crew 8/97; K.W. Barkhau & crew 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1570 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 15 Unit 1570 Occurs in Alternatives: D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1570****Area: Inbetween****Total Unit Acres - 15****Harvest Acres - 15****Total Unit Volume (MBF) - 193****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	100	193	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is a mix of western hemlock and cedar with minor amounts of mountain hemlock and spruce. The form is generally good, except in the cedar. Most cedars over 14" dbh have basal decay. Hemlock poles and saplings are present, but not vigorous. Plant association is western hemlock/yellow cedar - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of smaller Class II, category A streams along lower unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife -none

Visuals - Feather edges to reduce visual impact.

Heritage -none

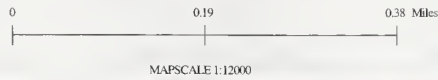
III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut. Feather boundaries to reduce visual impacts. The yarding system is running skyline along Road 76051.

Resource Review Completed By: M. Dalton; B. Beall & crew 8/97.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1572 QUAD(s): SITD5SE
TOTAL UNIT ACRES: 43 Unit 1572 Occurs in Alternatives: D



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1572****Area: Inbetween****Total Unit Acres - 43****Harvest Acres - 39****Total Unit Volume (MBF - 571)****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	81	462	cable	even-age (60 %) two-aged (40%)	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation -Overstory Description: Predominately western hemlock/blueberry. An area in the central part of the unit which is western hemlock/blueberry/devil's club associated with a change in the drainage patterns, this area has a couple of large canopy openings which may be related to past soil movement. To the south and east, yellow cedar begins to co-dominate with western hemlock in a western hemlock-yellow cedar/blueberry association. Nice looking sawlogs of both hemlock and yellow cedar. Windthrow hazard is estimated at moderate to high. Understory Description: Shrub layer dominated by blueberry. Devil's club dominating localized patches in central portion. Also in this central portion, red alder occupies canopy gaps. Forbs layer with *Cornus*, *Coptis*, and *Rubus pedatus*. Hemlock regeneration is very common and, where canopy gaps are large enough, saplings and poles are healthy and vigorous.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, category A streams (including AF1/HC4 channel) along and within lower unit boundary, and Class III streams as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B streams located along the NW (part of HC4) and E boundary and in the center of unit (HC6). Probable Class III along E boundary was neither field identified nor shown on unit map. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect several Class IV, category C streams as per BMP 13.16.

Soils - Ensure that partial suspension is maintained in order to minimize damage to shallow soils on small cliffs and steep areas that occur throughout the unit.

Wildlife - none

Visuals - Feather edges to reduce rectilinear appearance.

Heritage - none

III. Integrated Harvest Prescription

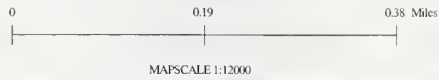
The recommended harvest treatment (Alternative D) is clearcut with reserves. Reserves will be left in the no-cut buffer adjacent to the Class III stream, in the wind management zone adjacent to this buffer where 30% of volume will be reserved, and along unit boundaries where unmerchantable trees are to be retained to reduce abruptness of cutting boundaries. These areas (40% of unit) will be managed as two-aged management. Consider hand planting area in the southeast part of the unit with yellow cedar to promote cedar component on this hemlock-yellow cedar site. Rely on the anticipated abundant natural regeneration on other areas. The yarding system is live skyline off Road 76051.

Resource Review Completed By: K.W. Barkhau & crew, B. Beall & crew 8/97.
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FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1590A QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 29 Unit 1590A Occurs in Alternatives: B



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area

VCU: 230

Unit: 1590A

Area: Inbetween

Total Unit Acres - 29

Harvest Acres - 29

Total Unit Volume (MBF) - 677

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	677	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II Pertinent Resource Information**

Vegetation - The stand is primarily western hemlock with 25% cedar and minor amounts of spruce. The trees are small in diameter with minor stem decay. The plant association is western hemlock/cedar-blueberry and western hemlock - blueberry/shield fern. *Vaccinium* spp. is less than 25%; shield fern is common. Windthrow hazard is low.

Streamcourse Protection - none

Soils - none

Wildlife - none

Visuals - none

Heritage - none

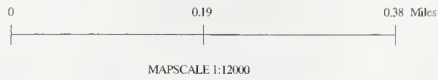
III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut. The yarding system is live skyline off Road 7605.

Resource review completed by: L.A. Winn & crew 7/94; G.M. Killinger 6/17/97, W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1590B QUAD(s): SITD5SE
TOTAL UNIT ACRES: 36 Unit 1590B Occurs in Alternatives: B D



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1590B****Area: Inbetween****Total Unit Acres - 36****Harvest Acres - 35****Total Unit Volume (MBF) - 746****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	97	721	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is primarily western hemlock with 25% cedar and minor amounts of spruce. The trees are small in diameter with minor stem decay. The plant associations are western hemlock/cedar-blueberry and western hemlock - blueberry/shield fern. *Vaccinium* spp. is less than 25%; shield fern is common. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of small Class II, category A stream (MM0 channel) along and within lower SW unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Windfirmness along this stream buffer is not a concern due to mix of smaller tree sizes present. This stream is Class IV further uphill. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

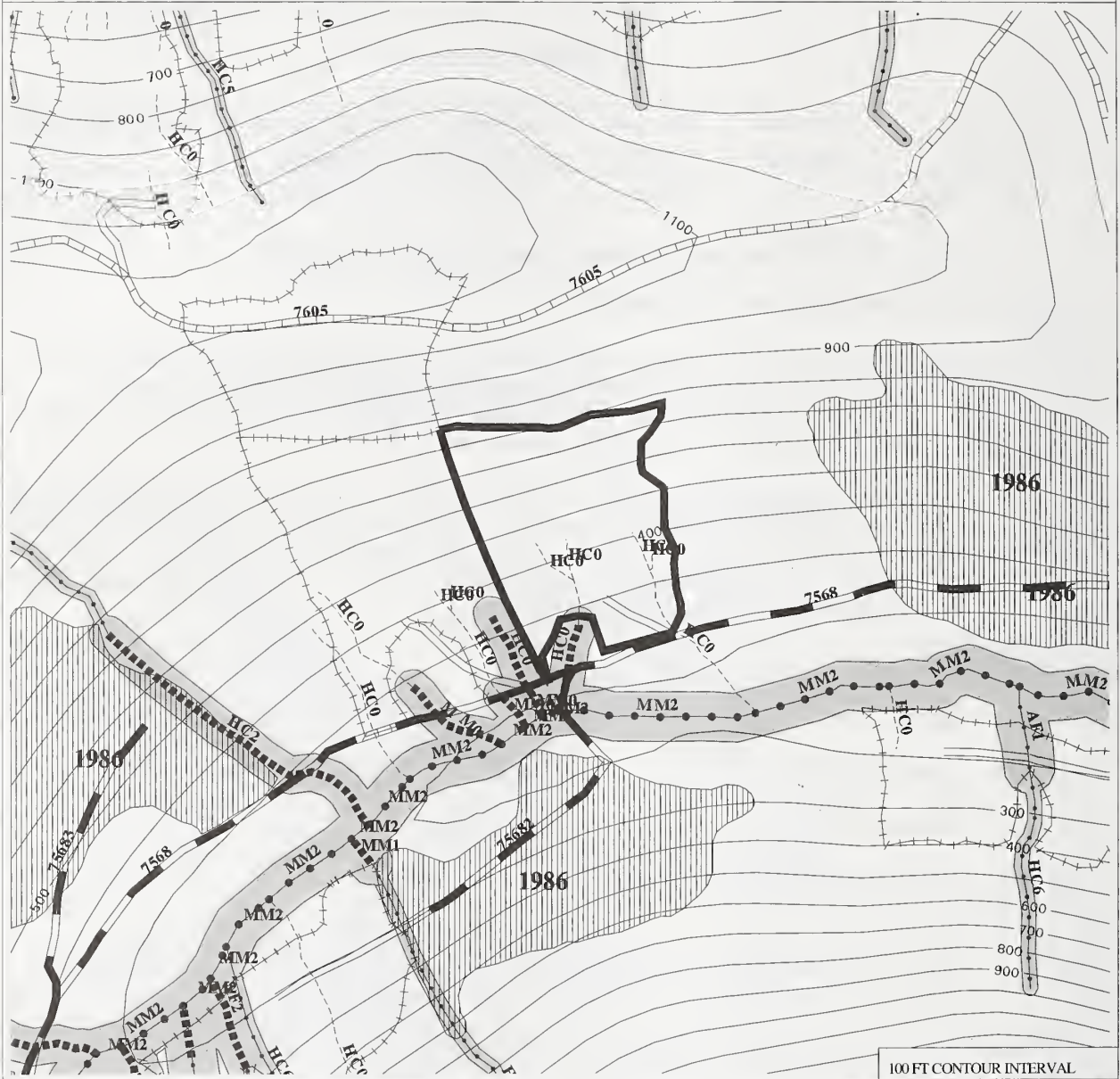
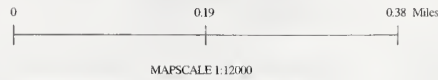
Alternatives B and D - the recommended treatment is clearcut with reserves. The reserves are located in the stream buffer. Refer to Streamcourse Protection notes above. The yarding systems are running skyline and live skyline off Road 7568 and a temporary road.

Resource Review Completed By: G.M. Killinger 6/17/97; W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1593B QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 32 Unit 1593B Occurs in Alternatives: B D



EXISTING HARVEST UNIT
 WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1593B****Area: Inbetween****Total Unit Acres - 32****Harvest Acres - 31****Total Unit Volume (MBF) – 620****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	99	612	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is primarily western hemlock with 25% cedar and minor amounts of spruce. The trees are small in diameter with minor stem decay. The plant association is western hemlock/cedar-blueberry and western hemlock - blueberry/shield fern. *Vaccinium* spp. is less than 25%; shield fern is common. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of small Class II, category A stream (MM0 channel) along and within lower SW unit boundary as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Windfirmness along this stream buffer is not a concern due to mix of smaller tree sizes present. This stream is Class IV further uphill. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

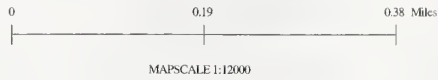
Alternatives B and D - the recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource review completed by: L.A. Winn & crew 7/94; G.M. Killinger 6/17/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1610 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 27 Unit 1610 Occurs in Alternatives: D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1610****Area: Inbetween****Total Unit Acres - 27****Harvest Acres - 17****Total Unit Volume (MBF) - 542****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	62	336	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is mainly western hemlock with occasional cedar and spruce as intermediates. Timber is patchy with some good regeneration in the canopy openings. Plant association is western hemlock-blueberry/devil's club. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, category A streams (including AF1, AF2, and MM2 channels) along and within lower unit boundary, and multiple Class III streams as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of four Class III, category B, HC6 streams located throughout the W half of unit (harvest will only occur NE of the Class III stream near center of unit), and another along the NE boundary. Due to large size of trees in stream buffers next to harvest area, feather (remove larger trees, retain smaller trees) area adjacent to stream buffers to increase probability that riparian buffers will remain windfirm. Protect Class IV, category C streams, including HC0 in NE 1/3 of unit, as per BMP 13.16.

Soils - Do not cut isolated timber in the southwest portion of unit in order to maintain soil stability on the steep slopes in this area.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

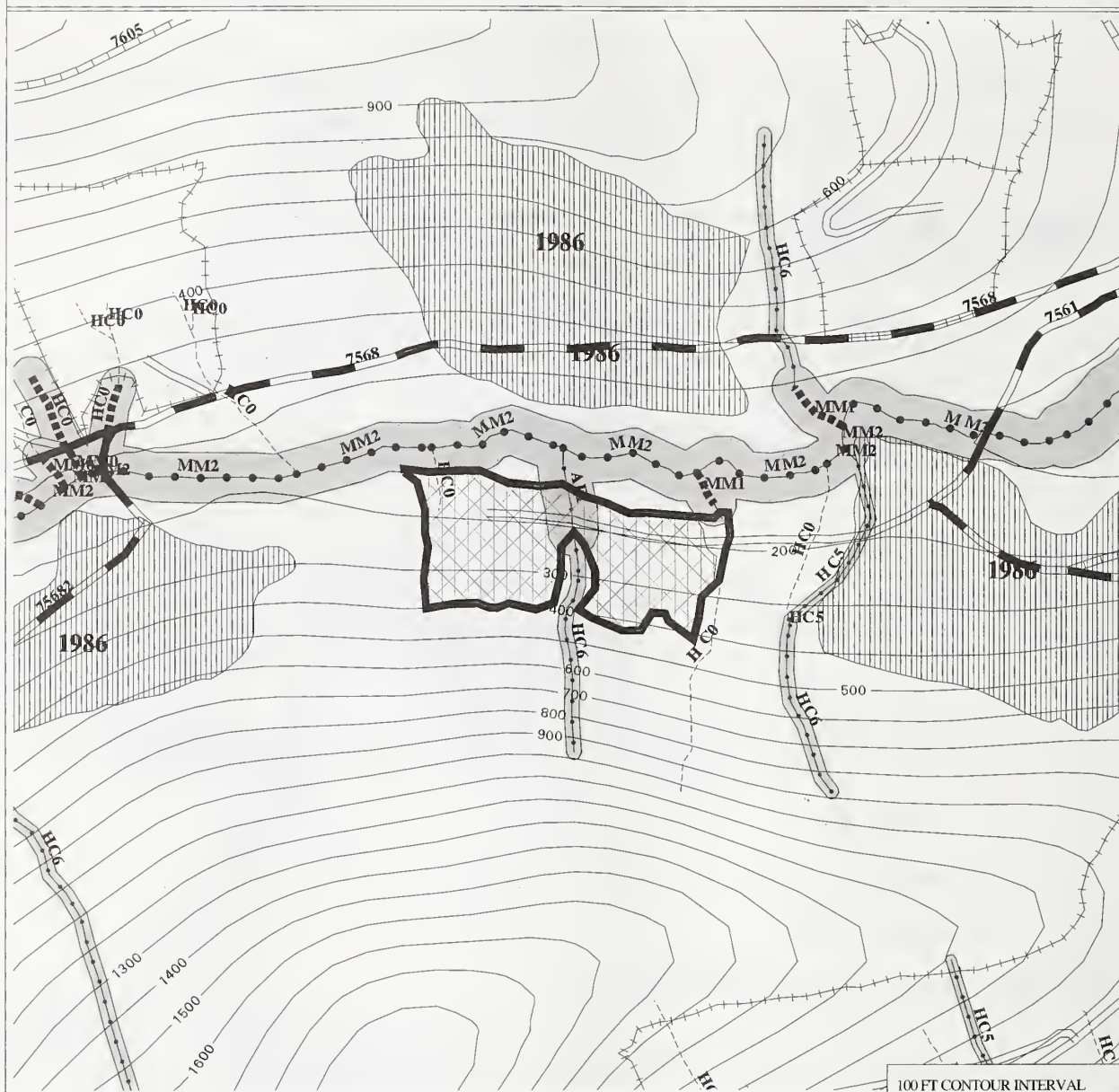
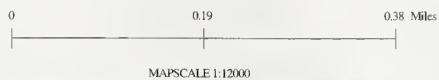
Alternative D - The recommended treatment is clearcut with reserves. The western half of the unit is comprised almost totally of streamcourse buffers. Leave 30% of the volume in the smaller diameter classes and feather in the wind management zone. There are 2 small patches of isolated timber between the buffers, which will not be harvested. The yarding system is a running skyline off a temporary road.

Resource review completed by: L.A. Winn & crew 6/6/97; G.M. Killinger, M. Shephard 6/17/97; S.P. Beall 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1620 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 26 Unit 1620 Occurs in Alternatives: B D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1620****Area: Inbetween****Total Unit Acres - 26****Harvest Acres - 22****Total Unit Volume (MBF) - 981****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	85	829	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is composed of 80% western hemlock and 20% Sitka spruce. The trees are very large (34+” dbh) and widely spaced. The crowns are very full and have many limbs. Some older canopy gaps are stocked with healthy 6-16” dbh poles. Recent canopy gaps are filled with devil’s club. Plant association is western hemlock - blueberry/devil’s club. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, category A streams (including MM1, and MM2 channels) along and within lower unit boundary, and Class III streams as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of two Class III, category B, streams located in center of unit (unstable HC6/AF1 channel) and along the E boundary (HC6/MM1). Due to large size of trees in stream buffers next to harvest area, recommend feathering (remove larger trees, retain smaller trees) area adjacent to stream buffers to increase probability that riparian buffers will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure that partial suspension is maintained over steep slopes in upper portion of unit along the backline.

Wildlife - The stand contains 26 acres of high value marten habitat.

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

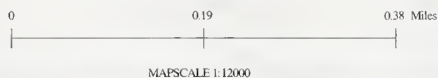
Alternatives B and D - The recommended treatment is clearcut with reserves. The entire unit is in high marten habitat. Much of the reserves for marten can be obtained in the streamside buffers. An additional 0.74 acres of reserves must be retained for marten; recommend this be achieved by enlarging one of the streamside buffers. The yarding system is a running skyline off a temporary road.

Resource review completed by: G.M. Killinger, M. Shephard 6/17/97; M. Johnson & crew 8/21/97; S.P. Beall 8/27/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1640 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 54 Unit 1640 Occurs in Alternatives: D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1640****Area: Inbetween****Total Unit Acres - 54****Harvest Acres - 50****Total Unit Volume (MBF) - 1,153****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	87	1,000	cable	even-aged(72%) two-aged(28%)	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is an uneven aged mixed conifer stand with an almost even mix of hemlocks and cedar. There is scattered spruce throughout. Saplings and poles are found in the canopy gaps and are of good form. The Vaccinium cover is 70% to 90%, there is a small component of rusty Menziesia. Plant association is mixed conifer - blueberry. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, category A streams along and within lower unit boundary, and Class III streams as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of two Class III, category B, streams located in center of unit and another along the NW boundary. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. The HC channel in the east ¼ of unit mapped as Class IV needs further verification (potential Class III). Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - Feather edges to reduce rectilinear appearance.

Heritage - none

III. Integrated Harvest Prescription

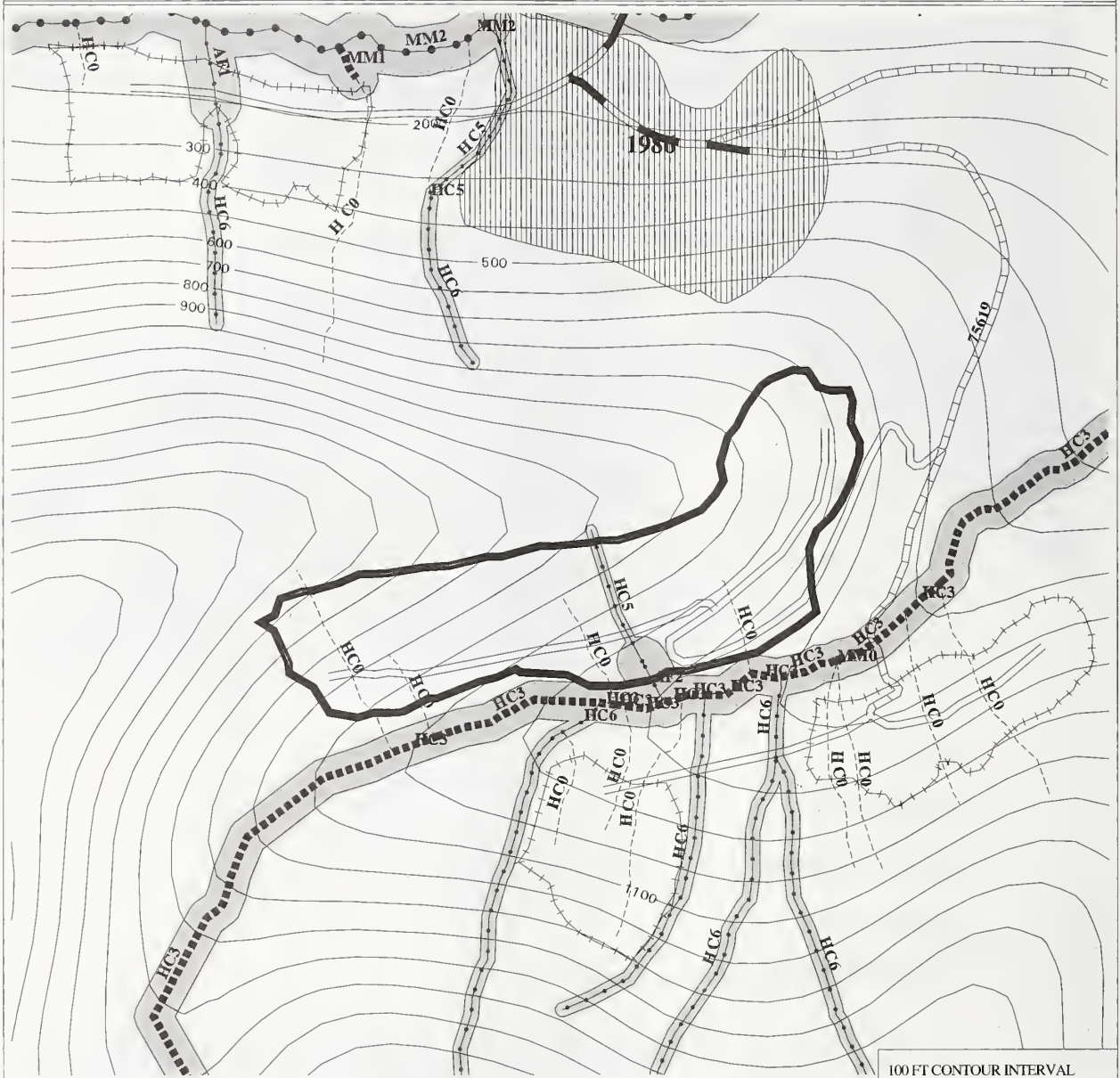
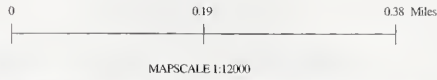
Alternative D - the recommended treatment is clearcut with reserves. There are two streams in the center of the unit that will be buffered. Surrounding those buffers is a wind management zone where 30% of the volume will be left. The yarding systems are running skyline and live skyline off Road 7561 and 3 temporary roads.

Resource review completed by: Stelick & crew 8/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1650 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 68 Unit 1650 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1650****Area: Inbetween****Total Unit Acres - 67****Harvest Acres - 65****Total Unit Volume (MBF) - 1,445****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	96	1,392	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Stand is mixed conifer with almost even amounts of western and mountain hemlock, some cedar. Some cedar decline is evident. There are scattered large trees among the more common 14 to 20" dbh trees. Plant association is mixed conifer - blueberry and western hemlock - blueberry. Understory is well stocked but generally of poor form and vigor. *Vaccinium* spp. cover is 50% to 70%. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class III streams as per the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, streams located in center of unit and near the W boundary. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. There is a potential Class III channel between the two identified Class III channels and another potential Class III channel in the N 1/3 of the unit that needs further verification. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - Feather edges to reduce rectilinear appearance.

Heritage - none

III. Integrated Harvest Prescription

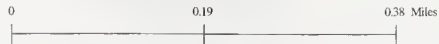
Alternative B - recommended treatment is clearcut with reserves. The reserve trees are located in the stream buffers. Refer to Streamcourse Protection notes above for location. Feather clearcut edges to reduce rectilinear appearance. The yarding system is a running skyline off two temporary roads.

Resource Review Completed By: S. Beall & crew 8/94; W.R. Dougan.
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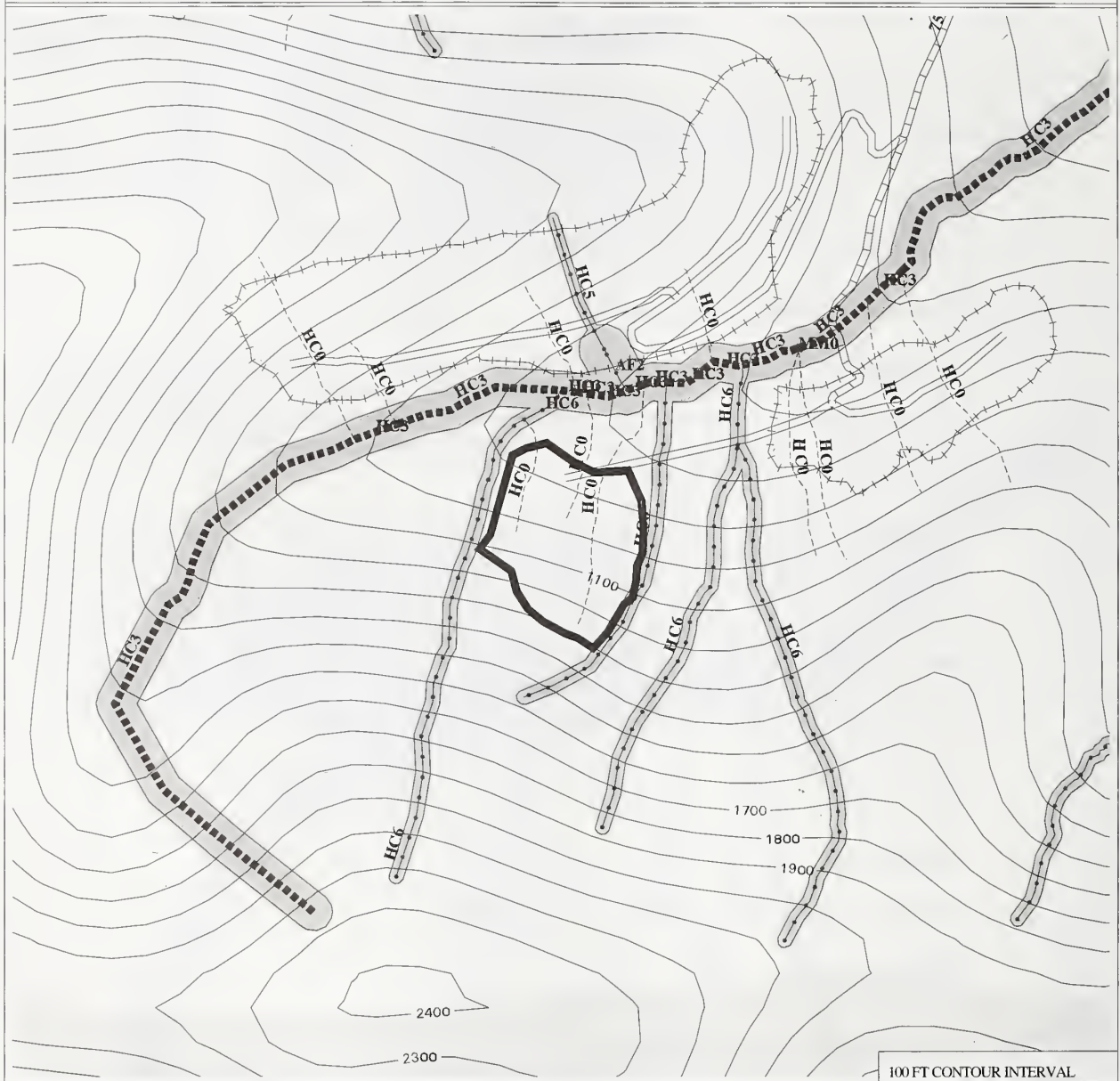
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1660 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 17 Unit 1660 Occurs in Alternatives: B



MAPSCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1660****Area: Inbetween****Total Unit Acres - 17****Harvest Acres - 17****Total Unit Volume (MBF) - 378****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	99	375	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a mix of western and mountain hemlock, with some spruce and a minor amount of cedar. The trees are decadent; weather damage is common. The stand density is variable with numerous openings. Understory is poorly stocked. Alder occurs in draws and brushfields. Plant association is mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. is 30% to 60%; there are minor amounts of rusty Menziesia and devil's club. Windthrow hazard is moderate.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located along the lower unit boundary (HC3 identified as Class II on map) and along the W and E boundaries. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure partial suspension throughout the unit in order to maintain soil stability.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

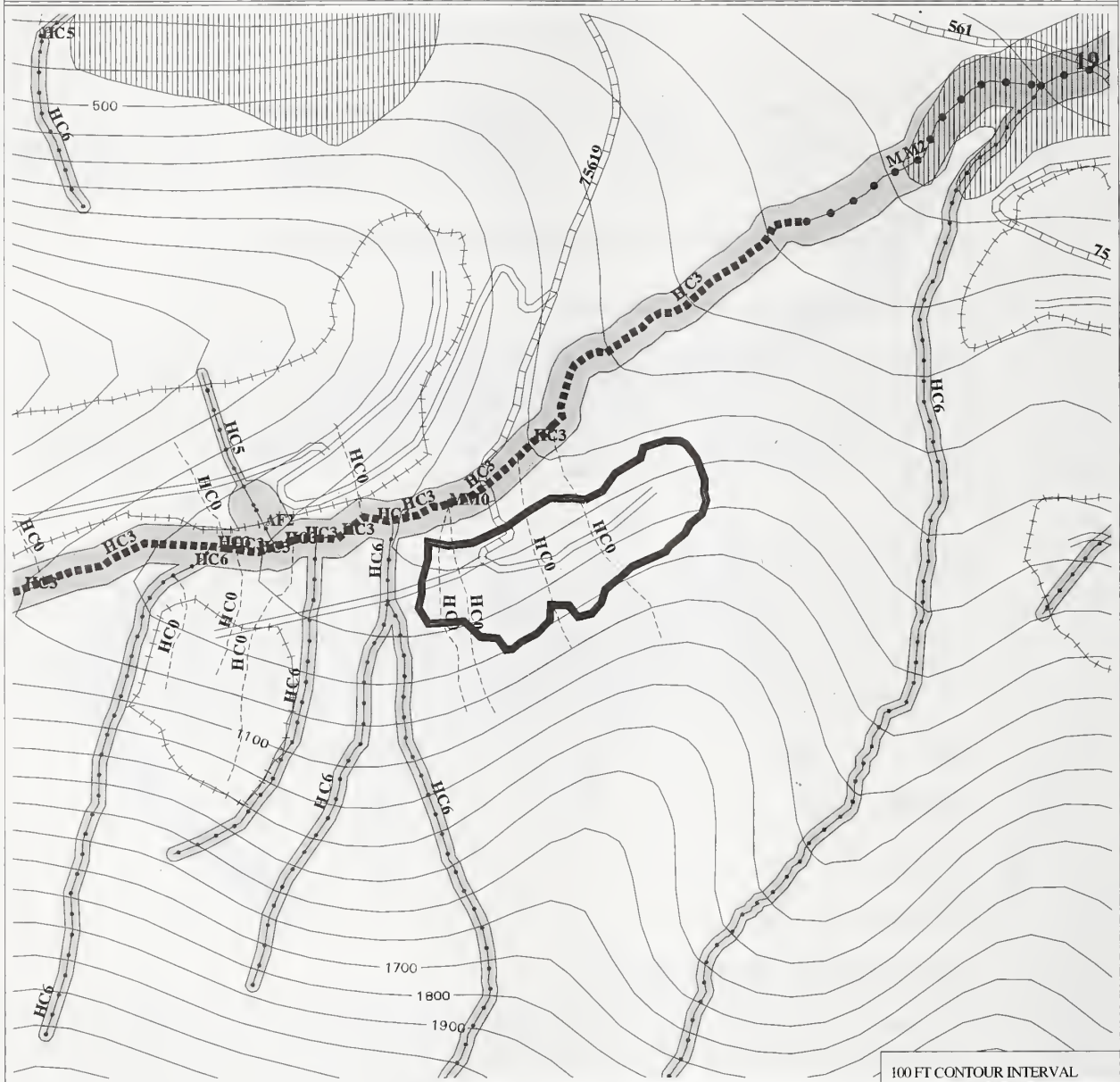
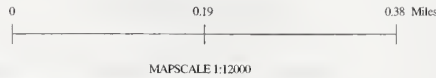
Alternative B - recommended treatment is clearcut. The yarding system is a running skyline off a temporary road.

Resource Review Completed By: S. Beall & crew; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1670 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 22 Unit 1670 Occurs in Alternatives: B



EXISTING HARVEST UNIT
 WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1670****Area: Inbetween****Total Unit Acres - 22****Harvest Acres - 21****Total Unit Volume (MBF) - 464****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	93	431	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The unit is primarily western hemlock, with a mix of cedar and spruce. Trees are large (22" dbh) with smaller diameters in the canopy gaps. Saplings and poles are found only in canopy gaps. Cedar is on the decline; otherwise, the stand has low decay. Plant associations are mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. is 60 % to 90%, some rusty Menziesia, devil's club and salmonberry.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class III, category B streams, as per the Forest Plan(4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located along the lower unit boundary (HC3 identified as Class II on map), in the middle of the unit, and along the W boundary. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure partial suspension throughout the unit in order to maintain soil stability.

Wildlife - none

Visuals -none

Heritage -none

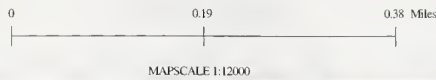
III. Integrated Harvest Prescription

Alternative B - recommended treatment is clearcut with reserves. Refer to Streamcourse Protection notes above for locations of reserve buffers. May want to plant with cedar to retain species diversity. The yarding system is a running skyline off two temporary roads.

Resource Review Completed By: B. Beall, P. Matter 1994; W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1680 QUAD(s): SITD5SE
 TOTAL UNIT ACRES: 59 Unit 1680 Occurs in Alternatives: D



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
 WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1680****Area: Inbetween****Total Unit Acres - 59****Harvest Acres - 55****Total Unit Volume (MBF) - 1,237****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	93	1,152	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is a mixed conifer stand with a high component of cedar. The cedar has a fair amount of rot. Wind damage is evident across unit. The saplings and poles are scattered and of poor form and vigor. *Vaccinium* spp. cover is 50%, rusty Menziesia is 10% to 20%. Plant association is mixed conifer - blueberry and mixed conifer - skunk cabbage. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of possible Class II, category A streams along the lower unit boundary, and Class III, category B and Class IV, category C streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located in the middle of the unit, and along the SE boundary. Where stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - Stream buffers and shape of unit used in bringing unit into conformance with adopted VQO.

Heritage - none

III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut with reserves. The reserves will be located in the no-cut stream buffers along the 2 streams in the west side of the unit. Refer to Streamside Protection notes above for location and extent of buffers. The boundaries and buffers of this unit have been designed to mitigate visual concerns. Feather clearcut edges to reduce rectilinear appearance. The yarding system is a running skyline off three temporary roads.

Resource Review Completed By: Stelick & crew; W.R. Dougan.
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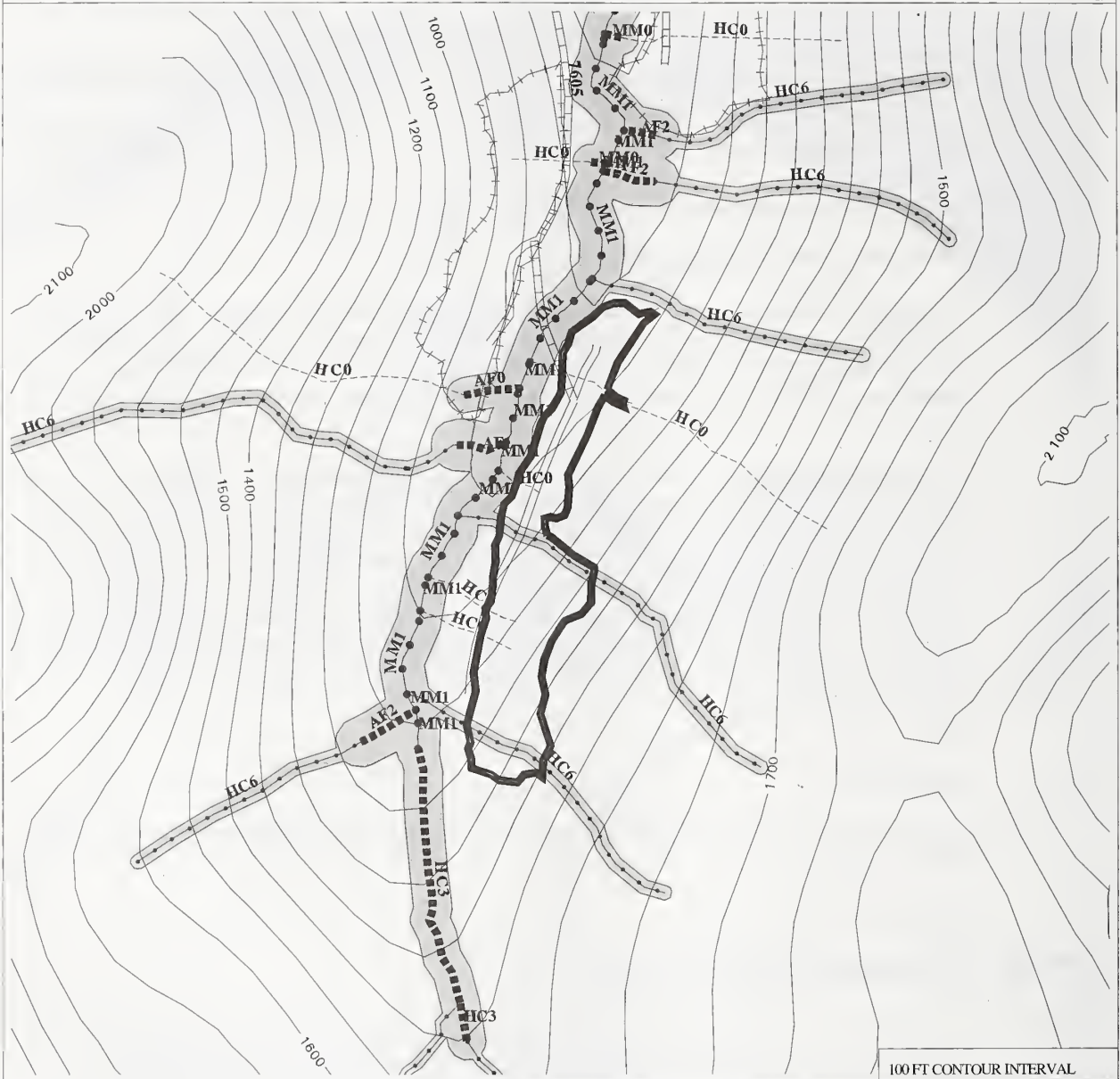
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1720 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 24 Unit 1720 Occurs in Alternatives: B



MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area

VCU: 230

Unit: 1720

Area: Inbetween

Total Unit Acres - 24

Harvest Acres - 23

Total Unit Volume (MBF) - 468

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	93	437	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is 50% mountain hemlock, 25% cedar with the remainder split between western hemlock and spruce. The trees are 12 to 22" dbh, with scattered larger trees. There are numerous wet areas throughout the stand causing the distribution of trees to be uneven. Saplings and poles are scattered throughout. The plant association is mountain hemlock-blueberry and mountain hemlock-deer cabbage. There is a 25% to 50% cover of *Vaccinium spp.*, rusty Menziesia and copperbush. The windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I/II, category A, MMI stream along the lower unit boundary, and Class III, category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located in the middle of the unit, and along the N boundary. The HC0 channel in the N 1/3 of the unit is an incised, larger Class IV that will require split yarding. There is a borderline Class III/IV channel in the lower 1/4 of the unit that needs further verification. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure one-end log suspension throughout the unit in order to maintain slope stability. Soil disturbance during yarding is of particular concern on steep areas along the backline and where soil drainage is restricted (small inclusions as indicated by skunk cabbage and/or false helibore).

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - the recommended treatment is clearcut with reserves. The reserves will be located along the streams. Refer to Streamcourse Protection notes above for locations and extent of buffers. The yarding system is a running skyline off two temporary roads.

Resource Review Completed By: E. Dow & crew 8/94; G.M. Killinger, M. Shephard 6/16/97; W.R. Dougan.

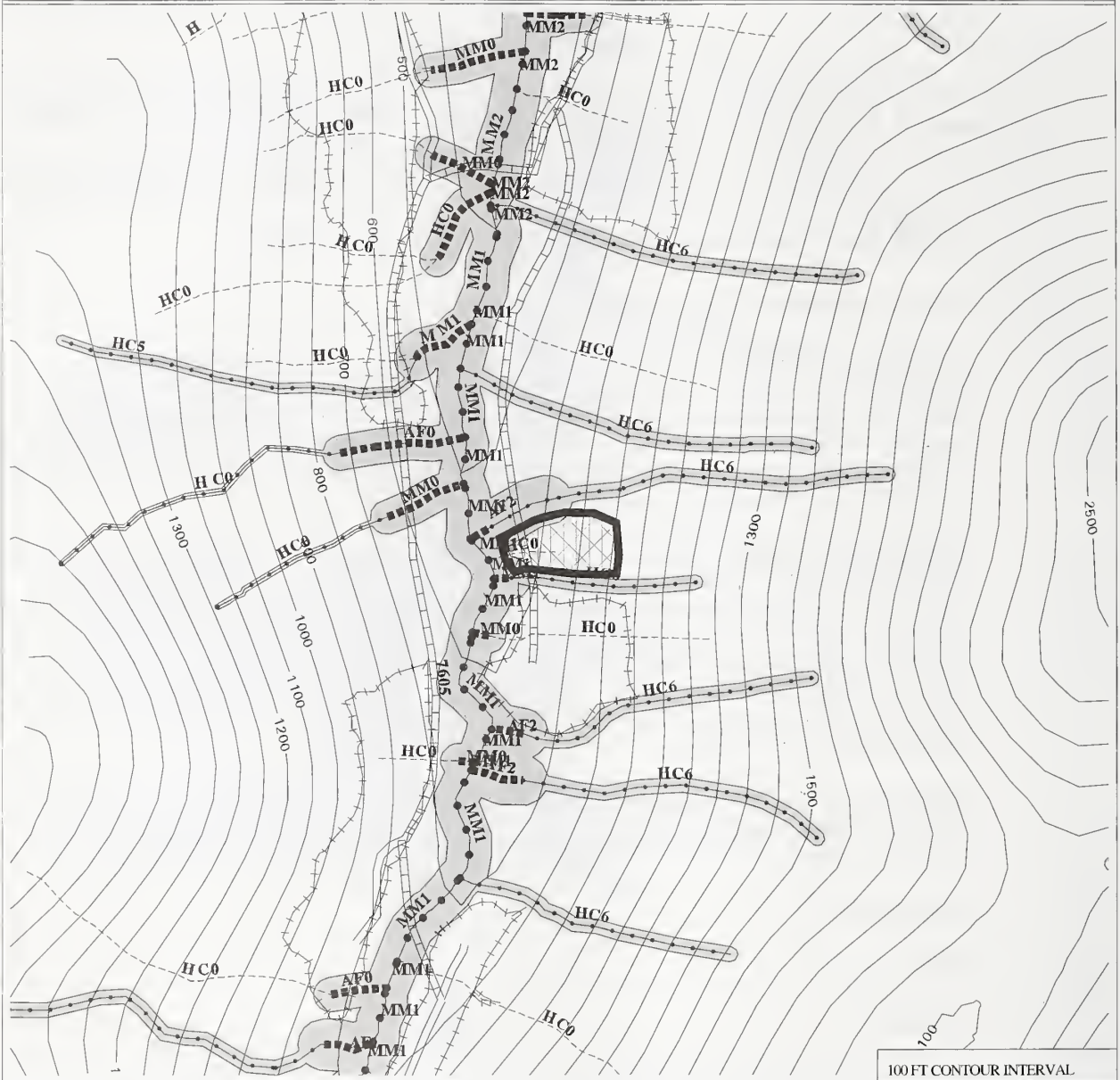
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1730 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 5 Unit 1730 Occurs in Alternatives: B

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1730****Area: Inbetween****Total Unit Acres - 5 Harvest Acres - 4 Total Unit Volume (MBF) - 179****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	84	150	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Overstory Description: Multi-aged western hemlock forest with trees well distributed through age classes including older, larger trees with high defect. Plant associations are primarily western hemlock/blueberry with a small area in the upper portion of the unit western hemlock-yellow cedar/blueberry. Many snags and cull trees for marten reserves. The windthrow hazard is estimated as low to moderate. Understory Description: Hemlock seedlings and sprouts abundant under overstory canopy. Seedlings, saplings, and poles look healthy and vigorous in canopy gaps. Blueberry cover is approx. 40% to 45%. Devil's club covers approx. 3% to 4%. Menziesia cover approx. 5%. Unit is adjacent to avalanche brushfield (alder and salmonberry).

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I/II, category A, MM1 and AF1/AF2 streams along the lower unit boundary, and Class III, category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located along the N and S boundaries. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure one-end log suspension on steep areas along the backline in order to minimize soil disturbance and protect slope stability.

Wildlife - The unit contains 5 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

The recommended harvest treatment (Alternative B) is clearcut with reserves. Reserves made in surrounding stream buffers will provide for Forest Plan standards for marten habitat. In addition, implementation of harvest prescription should strive to retain unmerchantable trees throughout the unit (both live and dead), particularly snags and near snags of larger diameter. Rely on the anticipated abundant natural regeneration for restocking. The yarding system is a running skyline off Road 76054.

Resource Review Completed By: B. Light 6/94; B. Beall, E. Dow 9/94; K.W. Barkhau & crew 8/97.

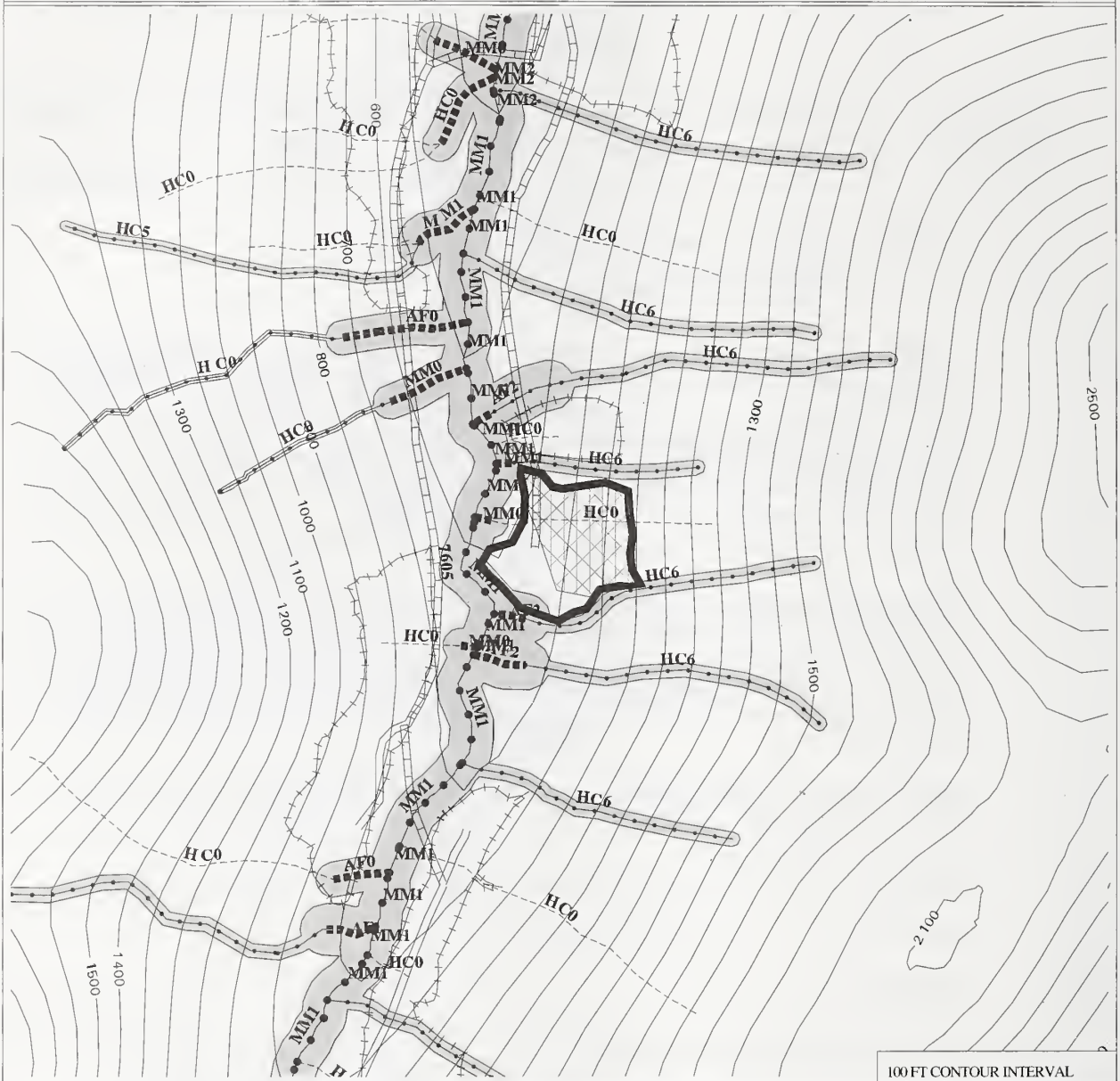
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1731 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 12 Unit 1731 Occurs in Alternatives: B



MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1731****Area: Inbetween****Total Unit Acres - 12****Harvest Acres - 11****Total Unit Volume (MBF) - 387****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	83	322	cable	two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II Pertinent Resource Information**

Vegetation - Overstory description: High canopy of rather uniform size trees with larger diameters. Ninety-five percent is western hemlock with a few nice Sitka spruce. These larger trees are rather widely spaced resulting in a discontinuous high canopy. The area between larger trees has filled in with a lower canopy layer of saplings and poles. This structure may have resulted from partial blowdown of a more continuous canopy structure. Upper portions of this unit are lower volume than below and contain some cedar. Windthrow potential is moderate. Understory description: Patches where hemlock saplings and poles look vigorous (not flat topped but with good leader growth). Salmonberry is present and might give conifer regeneration competition if there is significant yarding disturbance.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I/II, category A, MM1, AF1/AF2, and smaller streams along and within the lower unit boundary, and Class III, category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channels located along the N and S boundaries. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure one-end log suspension on steep areas along the backline in order to minimize soil disturbance and protect slope stability.

Wildlife - The unit contains 8 acres of high value marten habitat (Forest Plan 4-118 and 4-119)

Visuals – none

Heritage - none

III. Integrated Harvest Prescription

The recommended harvest treatment (Alternative B) is clearcut with reserves. Reserves made in surrounding stream buffers will provide only a portion of the reserves required by Forest Plan standards for marten habitat. Additional reserves will be required to satisfy marten standards. If some of the required reserves are made as small clumps in proximity to small patches of sapling/pole timber, these small patches of young trees may be protected from yarding damage, increasing post harvest diversity. Rely on the anticipated abundant natural regeneration for restocking. The yarding system is a running skyline off Road 76054.

Resource Review Completed By: B. Light 6/94; K.W. Barkhau & crew 8/97.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1750A QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 7 Unit 1750A Occurs in Alternatives: B



MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1750A****Area: Inbetween****Total Unit Acres - 7 Harvest Acres - 6 Total Unit Volume (MBF) - 240****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	64	153	cable	two-age	OVR >= 24"

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Overstory description: Multi-cohort structure with two distinct canopy layers, western hemlock/blueberry plant association. Estimate 20-30 trees per acre greater than 24" with a second cohort having an average diameter of approximately 12". Young cohort is 100 years old plus or minus 10 years (from cores), almost pure western hemlock. Windthrow potential is moderate. Understory description: Little coniferous understory due to canopy cover. Blueberry makes up approx. 20% of the ground cover.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I/II, category A, MM2, AF1/AF2, and smaller MM0 streams along the lower unit boundary, and Class III, category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channel located along the N boundary. Protect parallel, Class IV, category C streams along S boundary as per BMP 13.16.

Soils - Ensure one-end log suspension in order to minimize soil disturbance and protect slope stability (particular concern on steep areas along the backline).

Wildlife - The unit contains 5 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

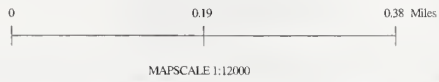
III. Integrated Harvest Prescription

The recommended harvest treatment (Alternative B) is an overstory removal of trees greater than 24 inches DBH. Retain all trees 24" diameter and less. Where possible, reserve unmerchantable of all diameters. This harvest prescription will provide more than adequate reserves to satisfy the requirements of the Forest Plan standards for marten habitat. This treatment is not designed as regeneration cut. Openings created by harvest will likely be occupied by surrounding trees and advance regeneration. The yarding system is a running skyline off Road 7605.

Resource Review Completed By: Stelick & crew 6/94; G.M. Killinger, M. Shephard 6/16/97; S. Jacobson & crew 8/97; KW. Barkhau & crew 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1750B QUAD(s): SITD5SW
TOTAL UNIT ACRES: 19 Unit 1750B Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 230****Unit: 1750B****Area: Inbetween****Total Unit Acres - 19****Harvest Acres - 18****Total Unit Volume (MBF) - 463****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	96	444	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is predominantly western hemlock with 20% to 40% cedar and minor components of mountain hemlock and spruce. The plant association is western hemlock-blueberry and mixed conifer - blueberry. There is 40% to 70% *Vaccinium* spp. cover. The stand has many openings. There are few saplings or poles. Windthrow hazard is low to moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I/II, category A, MM2, AF1/AF2, and smaller MM0 streams along the lower unit boundary, and Class III, category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of Class III, category B, HC stream channel located along the S boundary. Protect parallel, Class IV, category C streams along N boundary and another HC0, Class IV channel in middle of unit as per BMP 13.16. The HC0 channel in middle of unit is deeply incised and likely will require split yarding.

Soils - Ensure one-end log suspension in order to minimize soil disturbance and protect slope stability (particular concern on steep areas along the backline).

Wildlife - The unit contains 2 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

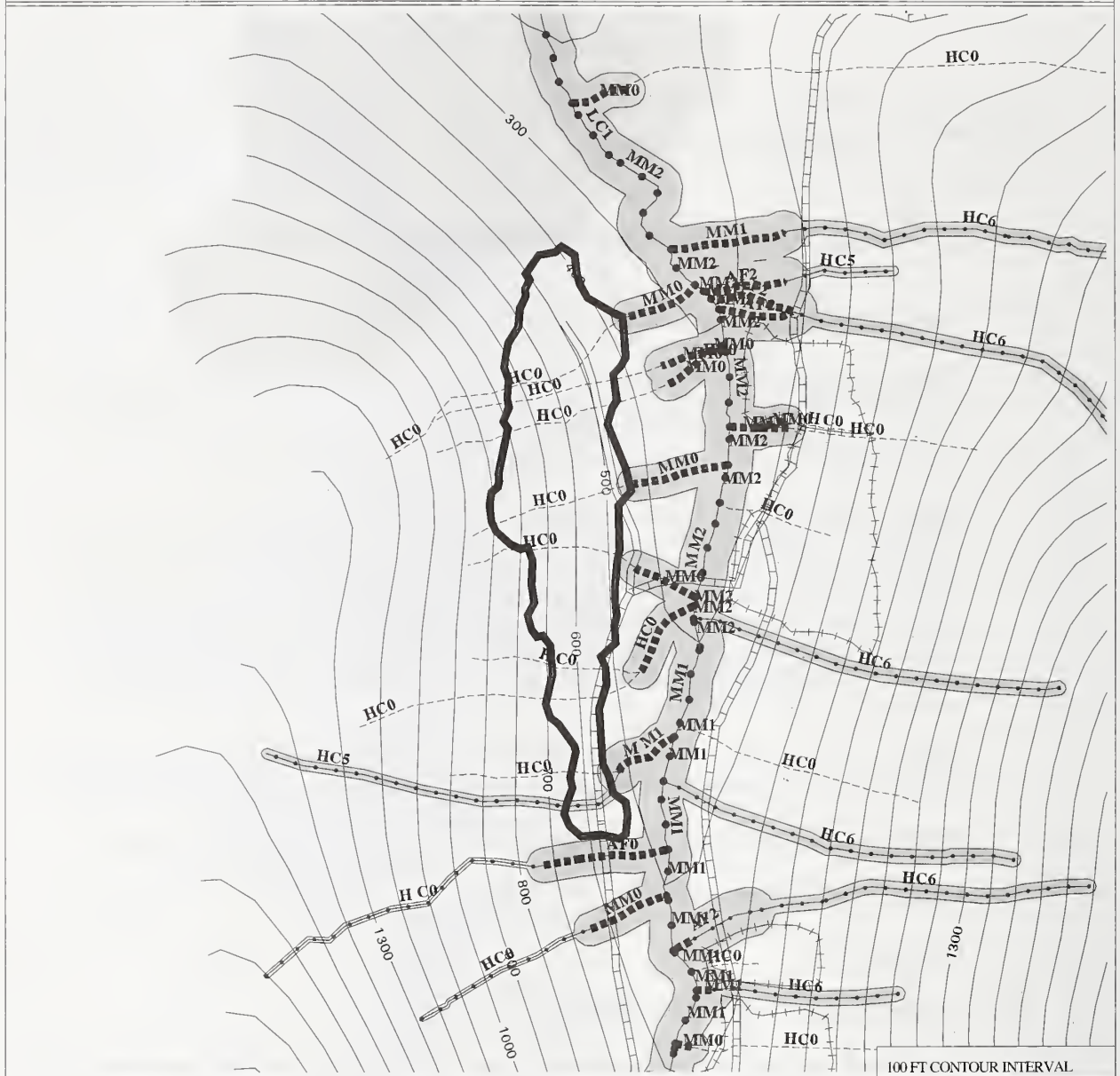
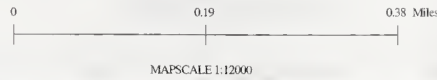
III. Integrated Harvest Prescription

Alternative B - the recommended treatment is clearcut with reserves. The high marten area is in the southwest corner of the unit. Three tenths of an acre of reserves is to be left in that area, either dispersed or in islands, in accordance with the standards and guides in the Forest Plan. The yarding system is a running skyline off Roads 7605 and 76054.

Resource Review Completed By: Stelick & crew 6/94; G.M. Killinger, M. Shephard 6/16/97; W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1770 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 38 Unit 1770 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT WITH DATE HARVESTED		CLASS III STREAM		AREA LOCATOR
UNIT BOUNDARY		CLASS IV STREAM		
ADJACENT UNIT		STREAM CHANNEL TYPE		
NEW SPEC. ROAD		MARTEN HABITAT—HIGH VALUE		
TEMPORARY ROAD		SALTWATER AND LAKES		
EXISTING SPEC. ROAD		STREAM RIPARIAN BUFFER		
CLASS I STREAM		WIND MANAGEMENT ZONE		
CLASS II STREAM		ISOLATED TIMBER		
		OLD GROWTH RESERVE		

Finger Mountain Planning Area**VCU: 230****Unit: 1770****Area: Inbetween****Total Unit Acres - 38****Harvest Acres - 37****Total Unit Volume (MBF) - 858****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	97	834	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is mixed conifer with more than 50% of the stand in cedar. There are dense pockets of cedar and hemlock saplings. The cedar has high defect and is showing decline in the wetter areas. The plant association is mixed conifer-blueberry and mixed conifer-copperbush. *Vaccinium* spp. cover is 70% to 90%. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of multiple smaller Class I/II, category A, MM0, PA0 and AF0 streams along the lower unit boundary, and a Class III, category B stream, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundaries at or above slope break of the Class III, category B, HC stream channel located in the S end of the unit. Protect numerous Class IV, category C streams as per BMP 13.16. The two Class IV, HC0 channels in the north 1/3 of the unit are deeply incised and likely will require split yarding. Insure landings are not located where they will impact streams.

Soils - Stream buffers along the south end of the unit should protect the slope stability on the channel side slopes. Ensure one-end log suspension in order to minimize soil disturbance and protect slope stability.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

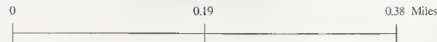
Alternative B - The recommended treatment is clearcut with reserves. The reserves are located as a buffer on the southernmost stream. Refer to Streamcourse Protection notes above for location and extent of buffer. The yarding system is a running skyline off of Road 7605 and a temporary road.

Resource Review Completed By: E. Dow & crew 8/94; G.M. Killinger, M. Shephard 6/16/97; L. Winn & crew 7/97; W.R. Dougan.
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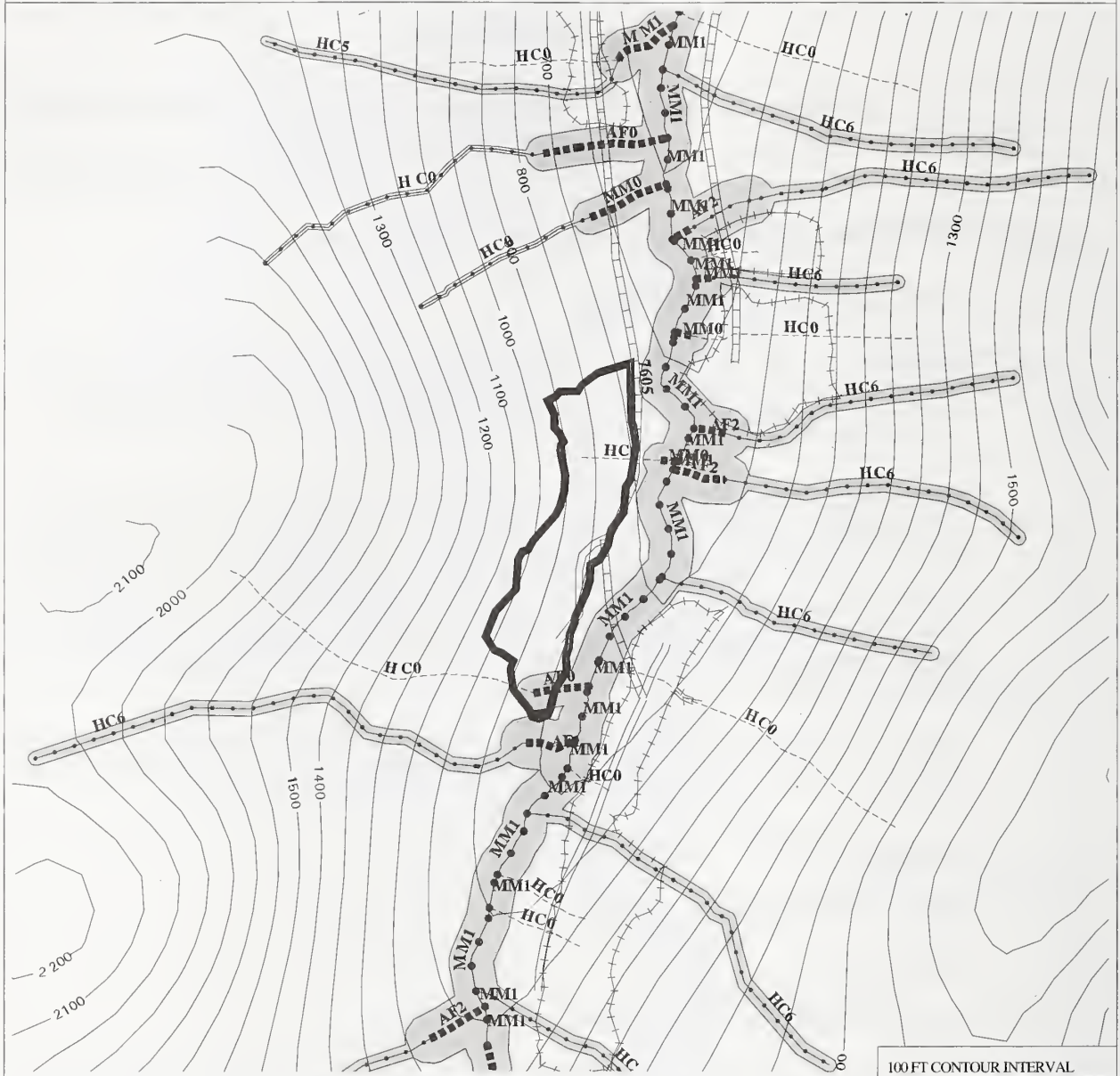
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 230 UNIT NUMBER: 1780 QUAD(s): SITD5SW
 TOTAL UNIT ACRES: 18 Unit 1780 Occurs in Alternatives: B



MAPSCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT

WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area

VCU: 230

Unit: 1780

Area: Inbetween

Total Unit Acres - 18

Harvest Acres - 17

Total Unit Volume (MBF) - 412

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	94	387	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This unit contains 50% mountain hemlock, 30% cedar, and some western hemlock and spruce. The stand is uneven aged, 12" to 22" dbh with scattered larger trees. Saplings and poles are scattered throughout the stand. Plant association is mountain hemlock-blueberry. *Vaccinium* spp. cover is 50% to 70%, rusty Menziesia cover is 20% to 30%. Windthrow hazard is moderate.

Streamcourse Protection - Maintain = or > 120 ft windfirm buffer on Class I, category A, MM1 stream along lower unit boundary as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Provide 100 ft or more buffers on AF0 channel along south unit boundary. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

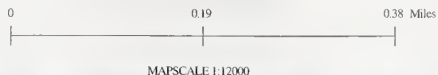
Alternative B - The recommended treatment is clearcut with reserves. The reserves will be located as a streamside buffer to the southernmost stream. Refer to streamside protection notes for location and extent of the reserve buffer. The yarding system is a running skyline off Road 7605 and a temporary road.

Resource Review Completed By: G.M. Killinger, M. Shephard 6/16/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1801 QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 15 Unit 1801 Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area

VCU: 234 Unit: 1801 Area: Fog Creek
Total Unit Acres - 15 Harvest Acres - 15 Total Unit Volume (MBF) 328

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	100	327	cable	even-age	clearcut
F	50	164	cable	two-age	small strip cuts

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is a mixed conifer stand with a high component of cedar. The cedar is showing decline, there is a high amount of stem rot and dead tops. The saplings and poles are common in canopy gaps but are of poor form and vigor. The *Vaccinium* spp. cover is 70% to 90%; rusty Menziesia is 10% to 20%. The plant association is western hemlock/yellow cedar - blueberry and mixed conifer - blueberry. Windthrow hazard is high.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of four small Class II, Category A streams in the lower unit area. Maintain = or > 100-ft. buffer along Class II, Category A streams, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). In the lower unit near Class II seep channels, vegetation is mixed size, mostly cedar; windfirmness along these stream buffers is not a concern. These are small Class IV, Category C streams within remainder of unit; protect as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - Feather clearcut edges to reduce visual impacts in alternative D.

Heritage - none

III. Integrated Harvest Prescription

Alternative D - Recommended treatment is clearcut. Feather the clearcut edges to reduce the visual impact as seen from Tenakee Inlet.

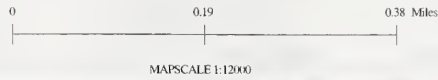
Alternative F - Recommended treatment is narrow strip clearcuts (approx. 100 feet wide) removing 50% of the total unit volume. The small openings created in harvest strips will reduce or eliminate the visual impacts of harvest as seen from Tenakee Inlet. Leave strips between harvest corridors will provide wildlife travel corridors with intact forest canopy.

The yarding systems are running skyline and swing off Road 75651.

Resource Review Completed By: W.R. Dougan; Stelick & crew 8/97; G.M. Killinger, B. Light 9/16/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1802 QUAD(s): SITC4NW
TOTAL UNIT ACRES: 22 Unit 1802 Occurs in Alternatives: D F



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1802****Area: Fog Creek****Total Unit Acres - 22****Harvest Acres - 16****Total Unit Volume (MBF) - 429****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	72	310	cable	even-age	clearcut w/reserves
F & H	36	155	cable	two-age	small strip cuts

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Plant associations are mixed conifer/blueberry and western hemlock-yellow cedar/blueberry. The average site index indicated from soil mapping is 58 (base 50 years). Overstory canopy cover is relatively open resulting in a brushy understory dominated by blueberry and rusty Menziesia. Potential for windthrow is moderate.

Streamcourse Protection - Area below (east) old road was deleted from unit to protect multiple Class I/II streams and buffers. Specialists needed during layout to identify and flag boundaries of three small Class II, Category A streams in the lower unit area above (west) the old road, and two other small Class II streams and wetland fen areas along the southeast boundary. Maintain = or > 100-ft. buffer along Class II, Category A streams, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). In the lower unit near Class II seep channels, vegetation is a mix of tree sizes, and windfirmness along these stream buffers is not a big concern. These are small Class IV, Category C streams within remainder of unit; protect as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - This hillside is visible from Tenakee Inlet and was identified during scoping as being visually sensitive to observers in Tenakee Inlet and residents of Tenakee Springs. In Alternative F, this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan.

Heritage - none

III. Integrated Harvest Prescription

In Alternative D, the harvest prescription is clearcut followed by planting cedar in entire unit. Planted seedlings may need to be protected from deer browse. Buffer all Class II channels. Retain unmerchantable live trees and snags near boundaries to reduce abruptness of cutting edge.

In Alternatives F and H, cut in small narrow strips (100-200 ft. wide with non-linear edges). Buffer all Class II channels. By alternating narrow cut strips with narrow leave strips, approximately 50% of the area outside the stream buffers will be cut and 50% uncut. Leave as much unmerchantable standing as practical. Position strips to minimize visibility from Tenakee Inlet and Tenakee Springs. Hand plant yellow cedar in harvested areas. Planted seedlings may need to be protected from deer browse.

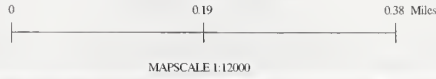
The yarding system is running skyline off Road 7560 and a temporary road.

Resource Review Completed By: K.W. Barkhau & crew 8/97; Stelick & crew 8/97; G.M. Killinger & crew 9/16/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233/234 UNIT NUMBER: 1803A QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 7 Unit 1803A Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area

VCU: 234 Unit: 1803A Area: Fog Creek
Total Unit Acres - 7 Harvest Acres - 7 Total Unit Volume (MBF) - 140

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F, & H	100	140	shovel	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Plant associations are mixed conifer/blueberry and western hemlock-yellow cedar/blueberry. The site index is low and standing timber volume likewise low. Overstory canopy cover is relatively open, resulting in a brushy understory dominated by blueberry and rusty Menziesia. Sphagnum mosses are common and dominate the ground layer in some areas. Potential for windthrow is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, Category A streams and to maintain = or > 100-ft. windfirm buffer on smaller Class I, Category A, palustrine (PA channel) stream and connected small pond areas along the south boundary as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Windfirmness along this stream is not a concern due to mix of tree sizes (predominantly smaller) present.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives D, F, and H - The recommended harvest prescription is clearcut. Consider hand planting yellow cedar to promote this species as a component in the regenerated stand. Planted yellow cedar would likely require protection from deer browse in the first few years following planting. The yarding system is shovel of a temporary road.

Resource Review Completed By: K.W. Barkhau & crew 8/97; M. Johnson & crew 8/97; G.M. Killinger, B. Light 9/17/97.

Finger Mountain Planning Area**VCU: 234****Unit: 1803B****Area: Fog Creek****Total Unit Acres - 1****Harvest Acres -1****Total Unit Volume (MBF) - 28****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	100	28	shovel	even-age	clearcut
F & H	70	20	cable	even-age	70% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Plant associations are mixed conifer/blueberry and western hemlock-yellow cedar/blueberry. The site index is low and standing timber volume likewise low. Overstory canopy cover is relatively open resulting in a brushy understory dominated by blueberry and rusty Menziesia. Sphagnum mosses are common and dominate the ground layer in some areas. Potential for windthrow is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, Category A streams. Maintain = or > 100-ft. windfirm buffers on smaller, Class I and II, Category A streams (PA0 and MM0 channels) along all unit boundaries except road, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Windfirmness along these streams is not a concern due to mix of tree sizes (predominantly smaller) present.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut. Consider hand planting yellow cedar to promote this species as a component in the regenerated stand. Planted yellow cedar would likely require protection from deer browse in the first few years following planting. The yarding system is shovel.

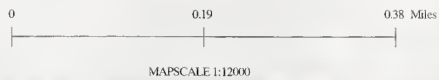
Alternatives F and H - The recommended harvest prescription is a 70% selection harvest. It is the intent to reserve approximately 30% of stand volume and to select reserves based on low economic value. The objective of reserved trees is to provide structural diversity in the regenerated stand. Consider hand planting yellow cedar to promote this species as a component in the regenerated stand. Planted yellow cedar would likely require protection from deer browse in the first few years following planting.

The yarding system is a running skyline off Road 7560.

Resource Review Completed By: K.W. Barkhau & crew 8/97; M. Johnson & crew 8/97; G.M. Killinger, B. Light 9/17/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234/233 UNIT NUMBER: 1804 QUAD(s): SITC4NW
TOTAL UNIT ACRES: 22 Unit 1804 Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1804****Area: Fog Creek****Total Unit Acres - 22****Harvest Acres -17****Total Unit Volume (MBF) - 539****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	79	423	cable	even-age	clearcut w/reserves
F & H	39	212	cable	two-age	small strip cuts

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Plant associations are mixed conifer/blueberry and western hemlock-yellow cedar/blueberry. The average site index indicated from soil mapping is 58 (base 50 years). Overstory canopy cover is relatively open, resulting in a brushy understory dominated by blueberry and rusty Menziesia. Potential for windthrow is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of three small, Class I and II, Category A streams and wetlands in the lower unit area. Maintain = or > 100-ft windfirm buffer along these Class I and II, Category A streams, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). The stream near the southeast unit boundary is Class IV upstream of the Class II habitat. Protect this Class IV, Category C stream as per BMP 13.16. In the lower unit near Class I and II stream channels, windfirmness along these stream buffers is not a concern due to mix of smaller tree sizes present.

Soils - none

Wildlife - The unit contains 2 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - This hillside is visible from Tenakee Springs and Tenakee Inlet and was been identified during scoping as being visually sensitive. In Alternative F, this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan.

Heritage - none

III. Integrated Harvest Prescription

Alternative D--The harvest prescription is clearcut with reserves followed by planting cedar in entire unit. Leave reserves in Class I and II stream buffers at bottom of unit. This will also provide reserves for marten habitat. Planted seedlings may need to be protected from deer browse. Buffer all Class II channels. Retain unmerchantable live trees and snags near boundaries to reduce abruptness of cutting edge. The yarding systems are running skyline and shovel.

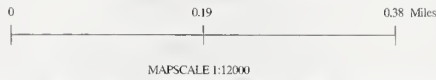
Alternatives F and H--Cut in small narrow strips (100-200 ft. wide with non-linear edges). Buffer all Class II channels. This will provide reserves for marten habitat as well. By alternating narrow cut strips with narrow leave strips, approximately 50% of the area outside the stream buffers will be cut and 50% uncut. Leave as much unmerchantable standing as practical. Position strips to minimize visibility from Tenakee Inlet and Tenakee Springs. Hand plant yellow cedar in harvested areas. Planted seedlings may need to be protected from deer browse. The yarding system is a running skyline off Road 7560 and a temporary road.

Resource Review Completed By: M. Johnson & crew 8/97; K.W. Barkhau & crew 8/97; G.M. Killinger, B. Light 9/17/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1805H QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 50 Unit 1805H Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1805H****Area: Fog Creek****Total Unit Acres - 50****Harvest Acres -48****Total Unit Volume (MBF) - 1,231****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F	48	592	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is a mixed conifer stand with a high component of cedar. The cedar is showing decline: there is a high amount of stem rot and dead tops. The saplings and poles are common in canopy gaps but are of poor form and vigor. The *Vaccinium* spp. cover is 70% to 90%; rusty Menziesia is 10% to 20%. The plant association is western hemlock/yellow cedar - blueberry and mixed conifer - blueberry. Windthrow hazard is high.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class III, Category B streams in southwest end and middle of the unit, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan, place unit boundary at or above slope break of Class III channels. No additional windfirm protection is required for Class III stream buffers given that a 50% harvest prescription across all diameter classes is used. Protect Class IV, Category C streams as per BMP 13.16.

Soils - A 50% selection harvest prescription will help maintain post harvest root strength reducing the risk of landslides. Maintain partial suspension throughout the unit to minimize soil disturbance.

Wildlife - The unit contains 7 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - This hillside is visible from Tenakee Inlet and was identified during scoping as being visually sensitive. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternatives D and F - The recommended treatment is 50% selection. The volume will be taken across all diameter classes. Streamside buffers will remain unharvested. The prescription will leave adequate reserves for the marten habitat requirements in the SW corner of the unit. This will also help to mitigate any visual concerns. Refer to Streamside Protection notes above for location and extent of buffers.

The yarding system is helicopter utilizing landings along Road 75651.

Resource Review Completed By: W.R. Dougan; Stelick & crew 9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1810 QUAD(s): SITC5NE/SITC4NW
 TOTAL UNIT ACRES: 32 Unit 1810 Occurs in Alternatives: B D F



MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1810****Area: Fog Creek****Total Unit Acres - 32****Harvest Acres - 27****Total Unit Volume (MBF) -532****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B, D & F	78	414	cable	even-age (63%) two-age (37%)	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is mostly mountain hemlock with some western hemlock. It is very decadent, has heavy mistletoe and generally poor vigor. The understory is also infected with mistletoe. The ground vegetation has 70% to 90% Vaccinium. Plant association is mixed conifer - blueberry and western hemlock - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams; Class III, category B streams; and Class IV, category C streams. Maintain = or > 100-ft. windfirm buffer along smaller Class II, category A streams near lower boundary, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Incorporate Class II buffers into nearby fen wetland areas. As outlined in the Forest Plan, place unit boundary at or above slope break of four Class III channels (HC5 & HC6) within the unit and the other Class III along the NE boundary. Implement 120-ft-wide windfirm zones alongside the SW side of all Class II (HC2 and MM0 channels) and Class III stream buffers (HC5 and HC6 channels) to increase probability that riparian buffers will remain windfirm. The managed windfirm zone width listed above is an additional area beyond the appropriate stream buffer. Protect four (one has 2 forks) Class IV, category C streams as per BMP 13.16.

Soils – none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives B, D and F - Recommended treatment is clearcut with reserves. There are 4 streams within unit that are buffered. In addition, there are wind management zones on the SW sides of these streams. The prescription in the wind management zones is to leave 30% of the volume in the smaller diameters. The stream buffers, as well as the trees left in the wind management zone, are the reserves. Refer to Streamcourse Protection notes above for details about the location and extent of the stream buffers.

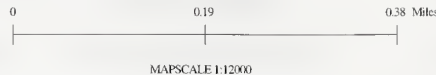
The yarding systems are running skyline and slackline off a temporary road.

Resource Review Completed By: W.R. Dougan; D. Hutson & crew 1993; T. Suminski & crew 9/93; G.M. Killinger & crew 8/9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1811 QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 26 Unit 1811 Occurs in Alternatives: B



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1811****Area: Fog Creek****Total Unit Acres - 26****Harvest Acres - 18****Total Unit Volume (MBF) -596****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	70	416	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is a decadent stand of western hemlock. There are scattered larger trees, understory is primarily saplings and poles of generally good form and vigor. Plant association is western hemlock - blueberry and western hemlock - blueberry/devil's club. Windthrow hazard is high.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams; Class III, category B streams; and Class IV, category C streams, as per BMP 12.6 and TLMP (4-8 to 4-11, and 4-53 to 4-73). Keep lower unit boundary uphill of the Class II segments of the five small streams that flow through the lower area near the old road. Several of these are Class IV uphill in the unit, and the channel along the NE boundary is Class III. Protect Class IV, category C streams as per BMP 13.16. As outlined in the Forest Plan, place unit boundary at or above slope break of Class III channels. Due to high windthrow hazard, implement 120-ft. windfirm zone (remove larger trees, retain smaller trees) alongside the SW side of the Class III stream buffer. The 120-ft managed windfirm zone width is an additional area beyond the appropriate stream buffer.

Soils - Ensure that partial suspension is maintained over the steep slopes along the backline in order to maintain slope stability.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

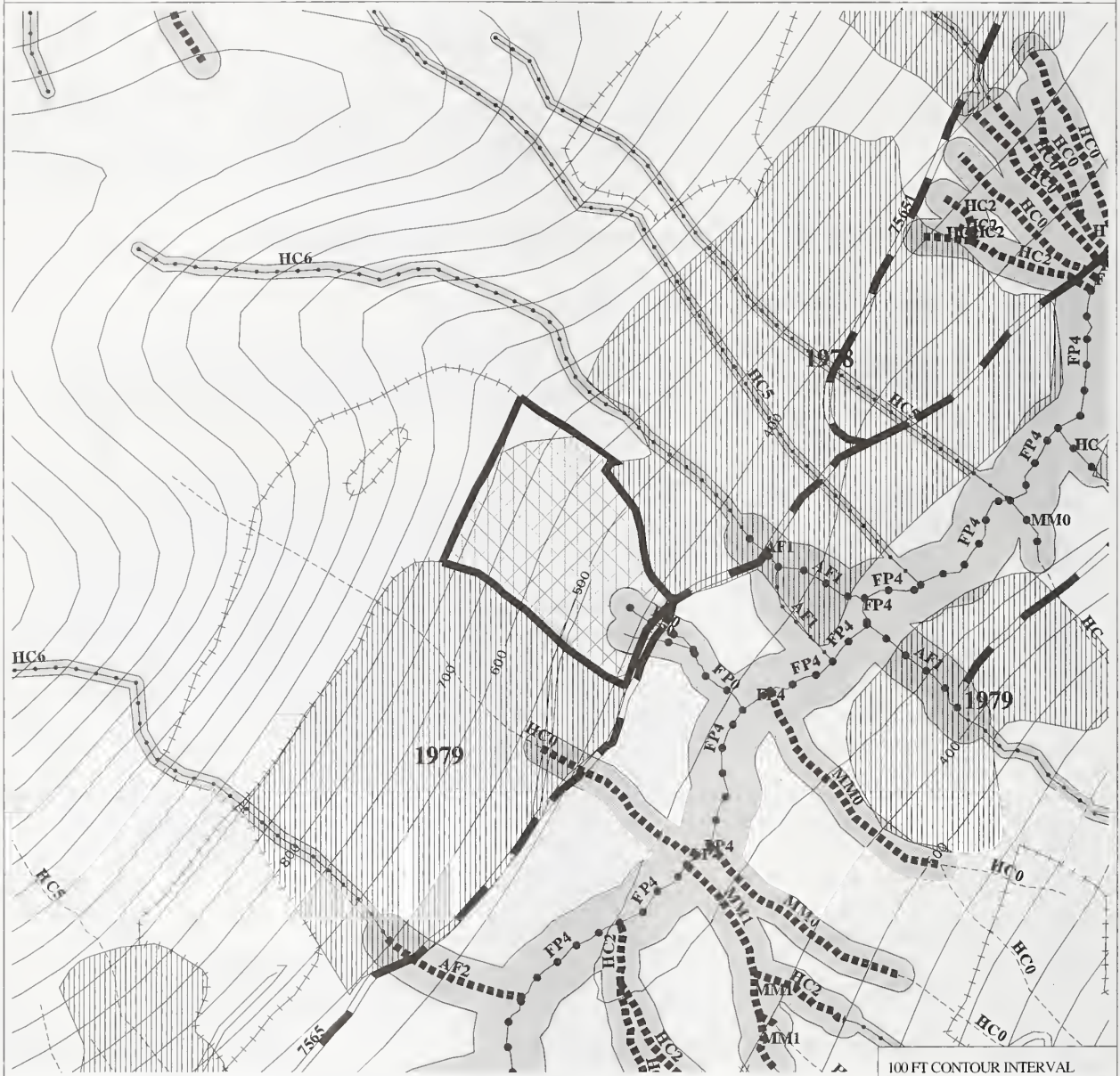
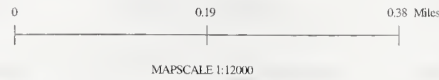
Alternative B - Recommended treatment is clearcut with reserves. The reserves are located in the stream buffers along the bottom of the unit. Refer to Streamcourse Protection notes above for location and extent of the buffers.

The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan; D. Hutson & crew 6/93; G.M. Killinger & crew 9/10/93.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1812 QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 27 Unit 1812 Occurs in Alternatives: D F



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1812****Area: Fog Creek****Total Unit Acres - 26****Harvest Acres - 25****Total Unit Volume (MBF) - 990****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	46	460	cable	two-age	clearcut w/resv
F	46	460	heli	two-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Overstory description: Mostly lower volume, lower grades, and high defect western hemlock/blueberry and western hemlock-yellow cedar/blueberry. The south western area where windthrow is concentrated appears to be somewhat higher site. This stand has been greatly affected by blowdown, particularly along southwest boundary where it adjoins stand 141, which was clearcut in 1979. This stand does not look like high volume strata as it has been mapped. However, there are enough larger (>24") live cull, snags, and snag recruits to meet marten reserve goals. The potential windthrow hazard is high. Understory description: Blueberry is very thick. There is a lot of low-vigor hemlock regeneration. Skunk cabbage in lower portions in excess of 3% to classify as a western hemlock/blueberry/skunk cabbage association.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of two Class II, category A streams, and a Class III, category B stream as per BMP 12.6 and TLMP (4-8 to 4-11, and 4-53 to 4-73). The small Class II channels go only 100 and 200 yards up into the lower unit area before disappearing underground. Maintain = or > 100-ft. windfirm buffer along Class II streams. If upper NE unit boundary is adjusted over to near the larger Class III, HC6 channel, place unit boundary at or above slope break as outlined in the Forest Plan. The planned 50% harvest prescription should provide windfirm protection for stream buffers.

Soils - Partial log suspension required when yarding steep slopes along backline in order minimize soil disturbance. The harvest prescriptions in both alternatives in which this unit occurs call for leaving 50% of the volume. This will also help to maintain slope stability.

Wildlife - The unit contains 25 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

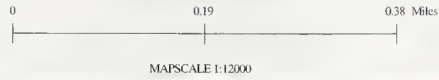
In Alternative D, the recommended treatment is clearcut with reserves with 50% retained in reserves. In Alternative F, the treatment is 50% individual tree selection. It is anticipated that only 50% of the volume will be recovered in these treatments due to the larger trees being left for marten and the amount of unsalvageable blowdown. These treatments will satisfy the standards and guidelines for marten. Rely on natural regeneration stimulated by harvest and advanced regeneration currently on site. Due to the high level of recent wind disturbance in this unit, there is an abundance of advanced regeneration.

In Alternative D, the logging systems are running skyline and slackline off Road 7565 and a temporary road. In Alternative F, it is helicopter utilizing a landing on Road 7565.

Resource Review Completed By: K.W. Barkhau 8/97; G.M. Killinger & crew 8/10/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1813 QUAD(s): SITC5NE/SITC4NW
 TOTAL UNIT ACRES: 4 Unit 1813 Occurs in Alternatives: D F



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1813****Area: Fog Creek****Total Unit Acres - 4****Harvest Acres 4****Total Unit Volume (MBF) - 84****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D & F	40	33	cable	uneven-age	40% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is mostly mountain hemlock with some western hemlock. It is very decadent, has heavy mistletoe, and generally poor vigor. The understory is also infected with mistletoe. The ground vegetation has 70% to 90% *Vaccinium* spp.. Plant association is mixed conifer - blueberry and western hemlock - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams. Maintain at least 100-ft. windfirm buffer along Class II, category A streams (MC1 and MC0 channels), as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Protect fen wetlands along S and W boundaries. Planned 40% harvest prescription should provide windfirm protection for stream buffers along boundary.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

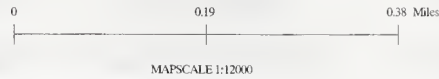
Alternatives D and F - The recommended treatment of 40% selection across all diameter classes will help protect stream buffers from windthrow. The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan; Stelick & crew; G.M. Killinger & crew 8/9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1813H QUAD(s): SITC5NE/SITC4NW
 TOTAL UNIT ACRES: 34 Unit 1813H Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1813H****Area: Fog Creek****Total Unit Acres - 34****Harvest Acres - 23****Total Unit Volume (MBF) - 830****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D & F	27	226	heli	uneven-age	40% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is mostly mountain hemlock with some western hemlock. It is very decadent, has heavy mistletoe and generally poor vigor. The understory is also infected with mistletoe. The ground vegetation has 70% to 90% *Vaccinium* spp. Plant association is mixed conifer - blueberry and western hemlock - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class II, category A streams; Class III, category B streams; and Class IV, category C streams. Maintain = or > 100-ft. windfirm buffer along Class II, category A streams along the lower unit boundary, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Protect Class IV, category C streams as per BMP 13.16. Several Class IV streams, including the one in the SW half of the unit, are deeply incised and may require split yarding of the v-notch or full suspension. As outlined in the Forest Plan, place unit boundary at or above slope break of Class III, HC5 channels along NE and SW boundaries and at or above the slope break of the large HC6 channel in the center of the unit. The planned 40% harvest prescription should provide windfirm protection for stream buffers.

Soils - The harvest prescription is a 40% selection, which will help to maintain root strength throughout the unit, minimizing the risk of landslides. Partial log suspension is required throughout the unit to minimize soil disturbance during yarding.

Wildlife - The unit contains 2 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives D and F - The recommended treatment of 40% selection across all diameter classes will help protect stream buffers from windthrow and will serve as reserves for marten. See Streamcourse Protection notes above for extent and location of streamside buffers.

The yarding system is helicopter utilizing a landing on a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger 8/9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1815H QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 50 Unit 1815H Occurs in Alternatives: D F



MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area

VCU: 234 Unit: 1815H Area: Fog Creek
Total Unit Acres - 50 Harvest Acres - 49 Total Unit Volume (MBF) 1,231

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D & F	39	482	heli	uneven-age	40% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - Overstory description: Large variation over unit. Highest elevations are mountain hemlock/blueberry associations with many openings dominated by brush. These areas are characterized by high defect and short tree heights. Western hemlock/blueberry areas range from productive to barely merchantable. In general, the lower the elevation in this unit, the higher the site productivity. Age and size distribution varies; there is one patch of single cohort structure easily mapped on aerial photographs (old blowdown). Windthrow potential is moderate to high. Understory description: Brush in all the associations is dominated by blueberry. Devil's club is common in draws while deer fern is common over most of the unit. Conifer regeneration (mostly western hemlock) is successful in openings in all but the mountain hemlock association, where some openings are dominated by blueberry and other vegetation.

Streamcourse Protection - As outlined in the Forest Plan, place unit boundary at or above slope break of Class III, HC6 channels located along the SW boundary, near the center of unit, and near the NE unit boundary. Protect numerous Class IV, category C streams as per BMP 13.16. The planned 40% harvest prescription should provide windfirm protection for stream buffers.

Soils - The designed unit boundary along the west side of the unit was lowered to exclude extremely steep slopes (>72%). However, many steep areas remain in the unit. An uneven-age management system using a selection harvest method (less than 50% harvest) will help maintain root strength throughout the unit, reducing the risk of landslides over a cutting cycle. An area inside the external unit boundary in the north end of the unit has slopes in excess of 100%. This area is excluded from harvest, as indicated in the unit card map. See Steep Slope Analysis Finger Mountain Timber Sale, October 20, 2000(planning record). Partial log suspension required throughout the unit to minimize soil disturbance during yarding and reduce the risk of landslides.

Wildlife - The unit contains 5 acres of high value marten habitat (Forest Plan 4-118 and 4-19).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives D and F - Harvest 40% of volume with helicopter yarding. Maintain the required slope break buffer to Class III channel on the southwest boundary. Known areas of oversteep slopes and/or shallow soils have been deleted from this unit. An additional soils review should be included at layout to help guide the field crews. Mark trees individually and/or in small groups from all diameter classes. Reserve trees will provide necessary marten habitat. Rely on advanced and natural regeneration after harvest.

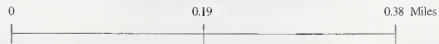
The yarding system is helicopter utilizing a landing on Road 7565.

Resource Review Completed By: L.A. Winn & crew 7/97; K.W. Barkhau 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1820 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 55 Unit 1820 Occurs in Alternatives: B D F



MAPSCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1820****Area: Fog Creek****Total Unit Acres - 55****Harvest Acres - 55****Total Unit Volume (MBF) -1,667****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B, D & F	93	1,547	cable	even age/two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is mainly decadent mountain hemlock with some western hemlock. Overstory has generally poor vigor and mistletoe is prevalent throughout the stand. The plant association is western hemlock - blueberry, western hemlock/yellow cedar -blueberry and mountain hemlock - blueberry. Windthrow hazard is low to moderate.

Streamcourse Protection - Specialists recommended during layout to identify and flag boundaries of Class III, category B streams and Class IV, category C streams as per BMP 12.6 & 13.16, and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Also, insure lower unit boundary is located uphill of Class II, category A streams in fen wetlands and near main channel. A stream in the SW half of unit was identified as a smaller Class III, HC0 channel. As outlined in the Forest Plan, place unit boundary at or above slope break of Class III channels. Protect the several Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - The unit contains 26 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

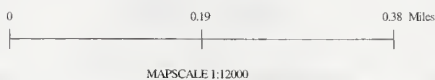
Alternatives B, D and F - The recommended treatment is even-age, clearcut with reserves. The reserves will be located in the high marten habitat areas in accordance with the Forest Plan standard and guidelines for marten.

The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan, S.A. Jacobson 9/93; C. Budke & crew 10/93.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1830 QUAD(s): SITC5NE/SITC4NW
 TOTAL UNIT ACRES: 26 Unit 1830 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
 WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1830****Area: Fog Creek****Total Unit Acres - 26****Harvest Acres - 18****Total Unit Volume (MBF) -335****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	69	230	cable	even-age/two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The unit is a mix of western and mountain hemlock with small components of spruce and cedar. The trees have a moderate to high amount of mistletoe, and dead tops are common. There is heavy brush competition in much of the area. The *Vaccinium* spp. cover is 60% to 80%. The plant association is mixed conifer - blueberry and western hemlock - blueberry. Wind hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, Category A streams and Class III, Category B streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). Maintain at least 100-ft. windfirm buffers along previously identified smaller Class II streams along the lower unit boundary, and incorporate them into adjacent fen wetland areas. As outlined in the Forest Plan, place unit boundary at or above slope break of the two Class III, HC6 channels on the E side of unit. The Class III channel more towards the center of the unit has mostly smaller (< 12 inch diameter) trees in/near the V-notch area; buffer windfirmness should not be a concern. Protect three Class IV, Category C streams as per BMP 13.16. The larger Class IV stream in the center of unit (E side, near Class III channel) is deeply incised and will require split yarding.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - Recommended treatment is clearcut with reserves. The northeast end of the unit has two streams that need buffers. The area between the streams is a wind management zone where no cutting will occur. Refer to Streamcourse Protection notes above for location and extent of stream buffers.

The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 8/9/97.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1850 QUAD(s): SITC4NW
TOTAL UNIT ACRES: 53 Unit 1850 Occurs in Alternatives: B

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1850****Area: Fog Creek****Total Unit Acres - 53****Harvest Acres - 48****Total Unit Volume (MBF) -1,703****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	87	1,488	cable	even-age/two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is predominantly western hemlock (up to 70%), with about 30 mountain hemlock, some cedar and spruce. Mistletoe is moderate to high, as is the decay. Saplings and poles are present but patchy. *Vaccinium* spp. cover is 20% to 40%, less than 15% salmonberry, devil's club, and rusty Menziesia. There are areas of open muskeg where the timber is spotty. The plant association is mixed conifer - blueberry, western hemlock - blueberry and mountain hemlock - blueberry. The windthrow hazard is low to moderate. Two portions of the original unit make up this "unit".

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, Category A streams in the lower unit area, and Class III, HC5 and HC6 Category B streams in the center and along the NE side of unit. Maintain at least 100-ft. windfirm buffer along Class I and II, Category A streams, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). MM1 channel along lower N boundary requires at least 120-ft. buffer. As outlined in the Forest Plan, place unit boundary at or above slope break of Class III channels, and protect as per BMP 13.16. Where possible, feathering (remove larger trees, retain smaller trees) along S side of Class III stream buffers in NE unit area will increase buffer windfirmness and maintain bank stability. Protect Class IV, Category C streams as per BMP 13.16.

Soils - Avoid yarding over portion of unit deleted due to wet soil and unmerchantable volume. Where incidental yarding does occur over this area, maintain at least partial suspension to protect vegetation and wet soils.

Wildlife - The unit contains 31 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut with reserves. The reserves will be left in the high marten habitat areas in accordance with the Forest Plan standards and guidelines for marten. May consider planting cedar in the upper portion of the unit to maintain and ensure species diversity.

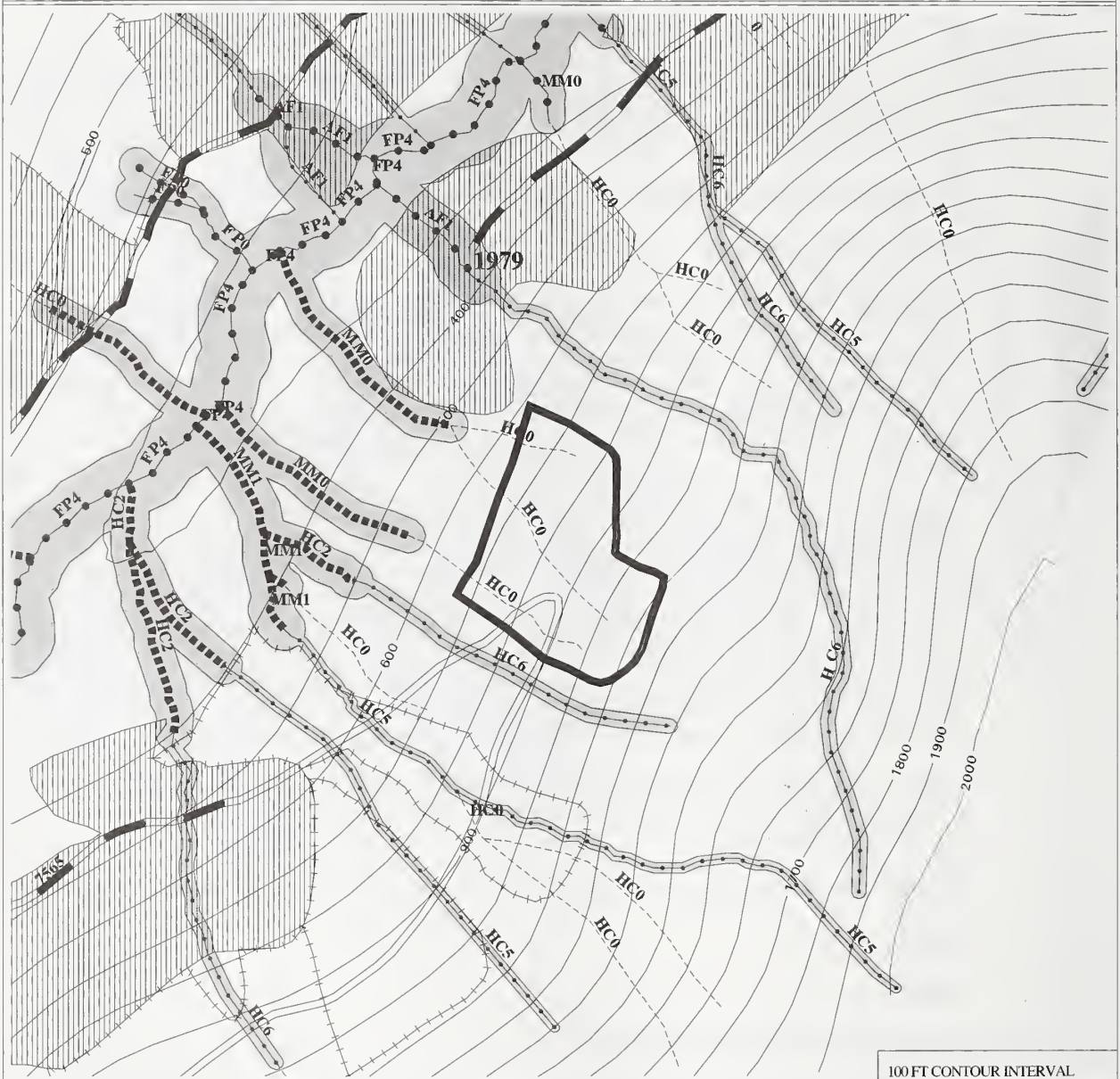
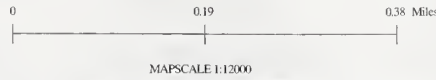
The yarding systems are running skyline and shovel off a temporary road.

Resource Review Completed By: W.R. Dougan; C. Budke & crew 6/93; G.M. Killinger & crew 9/93; L.A. Winn, S.P. Beall 8/97; G.M. Killinger & crew 8/10/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1852 QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 25 Unit 1852 Occurs in Alternatives: B



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1852****Area: Fog Creek****Total Unit Acres - 25****Harvest Acres - 25****Total Unit Volume (MBF) -599****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	100	599	cable	even-age	clearcut

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is an uneven aged, decadent stand comprised primarily of western hemlock, with some mountain hemlock and cedar. There are scattered large trees; the understory is primarily hemlock poles. The ground vegetation cover is 30% to 50% *Vaccinium* spp. and 30% devil's club. The plant associations are mixed conifer - blueberry and western hemlock - blueberry. The windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, Category A streams along the lower unit boundary, and Class III, Category B streams along the SW boundary. Keep lower unit boundary uphill of Class II channels, or maintain at least 100-ft windfirm buffer along Class II, Category A streams, as per BMP 12.6a and the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73). Keep SW unit boundary at or beyond slope break of Class III, HC6 channel, as outlined in the Forest Plan and BMP 13.16. Protect several Class IV, Category C streams within the unit as per BMP 13.16.

Soils - none

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut. The yarding system is running skyline off of a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 8/10/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 234 UNIT NUMBER: 1853 QUAD(s): SITC4NW
TOTAL UNIT ACRES: 39 Unit 1853 Occurs in Alternatives: B

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 234****Unit: 1853****Area: Fog Creek****Total Unit Acres - 39****Harvest Acres - 38****Total Unit Volume (MBF) -1,189****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	93	1,100	cable	even-age/two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is predominantly western hemlock, with 20% to 30% mountain hemlock, 5% to 40% spruce, and a small cedar component. The overstory has generally good form but has moderate to high decay (pini and mistletoe). Saplings and poles are understocked in some areas. The ground cover is 20% to 40% *Vaccinium* spp. and less than 15% salmonberry, devil's club and rusty Menziesia. The plant association is mixed conifer - blueberry, western hemlock - blueberry and mountain hemlock - blueberry. The windthrow hazard is low to moderate.

Streamcourse Protection - As outlined in TLMP and BMP 13.16, place unit boundary at or above slope break of Class III, HC6 channels in the NE third of unit and along the SW boundary. Protect Class IV, Category C streams as per BMP 13.16.

Soils - Ensure that partial suspension is maintained over steep slopes along backline. In addition, the steepest slopes in this unit, which occur along the east side of the backline, will receive additional protection; much of the volume will be left in this area as a stream buffer and for marten habitat. A soil scientist should review this unit during layout.

Wildlife - The unit contains 19 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B - The recommended treatment is clearcut with reserves. There is a stream that needs to be buffered in the NW end of the unit. Around the stream and along the SW boundary are areas of high marten habitat. These marten areas will have 30% of the volume left. Refer to Streamcourse Protection notes above for the location and extent of the stream buffer. Recommend planting cedar over entire unit to maintain species diversity.

The yarding systems are running skyline and shovel off on a temporary road.

Resource Review Completed By: W.R. Dougan; C. Budke & crew 6/93; G.M. Killinger & crew 9/93; L.A. Winn, S. Beall 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1950H QUAD(s): SITC5NE
TOTAL UNIT ACRES: 23 Unit 1950H Occurs in Alternatives: F

0 0.19 0.38 Miles

MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1950H****Area: South Crab****Total Unit Acres - 24****Harvest Acres - 22****Total Unit Volume (MBF) - 418****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	44	183	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is decadent with many dead and dying tops and scattered windthrow. It is a mix of western hemlock and cedar, with smaller amounts of spruce and mountain hemlock. There are scattered poles throughout the stand. The ground vegetation is 60% *Vaccinium* spp. There are many wet indicator species scattered throughout the area. The plant association is Alaska yellow cedar - blueberry and mixed conifer - blueberry. Windthrow hazard is moderate. Two residual portions of the original unit make up unit "1950H".

Streamcourse Protection - As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of powerful, deeply incised Class III, HC6 channel along south unit boundary. Protect deeply incised, Class IV, category C stream near the south unit boundary as per BMP 13.16.

Soils - The harvest prescription is a 50% selection, which will help to maintain root strength and slope stability. In addition, ensure that partial suspension is maintained throughout the unit.

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during scoping as having a high level of visual concern. This concern is addressed to a greater extent than is required under the adopted visual quality objective of maximum modification from the Forest Plan through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternative F - Recommended treatment is uneven-aged management using 50% selection. This mitigates both the visual concern and the windthrow hazard. The yarding system is helicopter utilizing landings along Road 7560.

Resource Review Completed By: G.M. Killinger, S. Jacobsen 7/11/97; Stelick & crew 9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1951H QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 7 Unit 1951H Occurs in Alternatives: D F



MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1951H****Area: South Crab****Total Unit Acres - 7****Harvest Acres - 6****Total Unit Volume (MBF) - 162****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	85	138	heli	even-age	clearcut with reserves
F	46	75	heli	uneven-aged	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is decadent with many dead and dying tops and scattered windthrow. It is a mix of western hemlock and cedar, with smaller amounts of spruce mountain hemlock. There are scattered poles throughout the stand. The ground vegetation is 60% *Vaccinium* spp. There are many wet indicator species scattered throughout the area. The plant association is Alaska yellow cedar - blueberry and mixed conifer - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III, HC6 channel near middle of unit. If clearcut with reserves prescription, implement 120 ft wide windfirm zone alongside the Forest Plan riparian buffer. The managed windfirm zone width listed above is an additional area beyond the appropriate stream buffer. Protect any Class IV, category C streams as per BMP 13.16.

Soils - Partial suspension required throughout the unit.

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during scoping as having a high level of concern for the scenic resource. In Alternative F this concern is addressed to a greater extent than is required under the adopted visual quality objectives from the Forest Plan of maximum modification through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut with reserves. The reserves are located in and surrounding the stream buffer in the middle of the unit. The stream buffer will be unlogged, the wind management zone around it will have 70% harvest of the larger diameter trees.

Alternative F - The recommended treatment is uneven-aged management using 50% selection. This addresses visual and windthrow concerns.

The yarding system is helicopter in both alternatives utilizing a landing along Road 7560.

Resource Review Completed By: G.M. Killinger 7/11/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1952H QUAD(s): SITCSNE
 TOTAL UNIT ACRES: 54 Unit 1952H Occurs in Alternatives: D F

0 0.19 0.38 Miles

MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1952H****Area: South Crab****Total Unit Acres - 54****Harvest Acres - 48****Total Unit Volume (MBF) - 1,017****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D	80	817	heli	even/two-age	clearcut with reserves
F	44	446	heli	uneven-aged	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is decadent with many dead and dying tops and scattered windthrow. It is a mix of western hemlock and cedar, with smaller amounts of spruce and cedar. There are scattered poles throughout the stand. The ground vegetation is 60% *Vaccinium* spp. There are many wet indicator species scattered throughout the area. The plant association is Alaska yellow cedar - blueberry and mixed conifer - blueberry. Windthrow hazard is moderate.

Streamcourse Protection - Specialists recommended during layout to identify and flag boundaries of Class I and II, category A streams, and Class III, category B streams. Protect Class III and IV streams as outlined in the Forest Plan standards and guidelines (4-8 to 4-11, & 4-53 to 4-73), and BMP 13.16. Place unit boundary at or above slope breaks of Class III channels. If clearcut with reserves prescription, implement 120 ft wide windfirm zones alongside Class III stream buffers (HC6 channels) to increase probability that riparian buffers will remain windfirm. The managed windfirm zone width listed above is an additional area beyond the appropriate stream buffer. Keep lower unit boundary uphill of Class II streams. Recommend split yarding deeply incised Class IV stream near S boundary.

Soils - Partial suspension required throughout the unit.

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during scoping as having a high level of concern for the scenic resource. In Alternative F this concern is addressed to a greater extent than is required under the adopted visual quality objective of maximum modification from the Forest Plan through the use of 50% individual tree selection. Landscape Architect input recommended during layout and harvest.

Heritage - none

III. Integrated Harvest Prescription

Alternative D - The recommended treatment is clearcut with reserves. The reserves are located in the unharvested stream buffers and in the partially (70%) harvested wind management zone surrounding the stream buffers. See Streamcourse Protection notes above for location and extent of stream buffers.

Alternative F - The recommended treatment is uneven-aged management using 50% selection. This mitigates the visual and windthrow concerns.

The yarding system in both alternatives is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: G.M. Killinger, S. Jacobsen 7/11/97; Stelick & crew 9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1970 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 51 Unit 1970 Occurs in Alternatives: F

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1970****Area: South Crab****Total Unit Acres - 51****Harvest Acres - 51****Total Unit Volume (MBF) - 790****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	50	391	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a decadent mixed conifer with a high percentage of cedar. The saplings are well distributed, although the majority of the hemlock is unmanageable. The plant associations are mountain hemlock - blueberry, mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. cover is 70%; forbs cover is 40%. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of five smaller Class I and II, category A streams along the lower, NE and SW boundaries, and a Class III, category B stream near SW boundary. Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III channel. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present, and the 50% harvest prescription. Protect Class IV, category C streams as per BMP 13.16.

Soils - Partial suspension required during yarding to minimize soil damage. There are no concerns with soil stability in this unit.

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during issue development as having a high level of concern for the scenic resource. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan of through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternative F - The recommended treatment is uneven-aged management using 50% selection. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: W.R. Dougan; G.M. Killinger 7/11/97.
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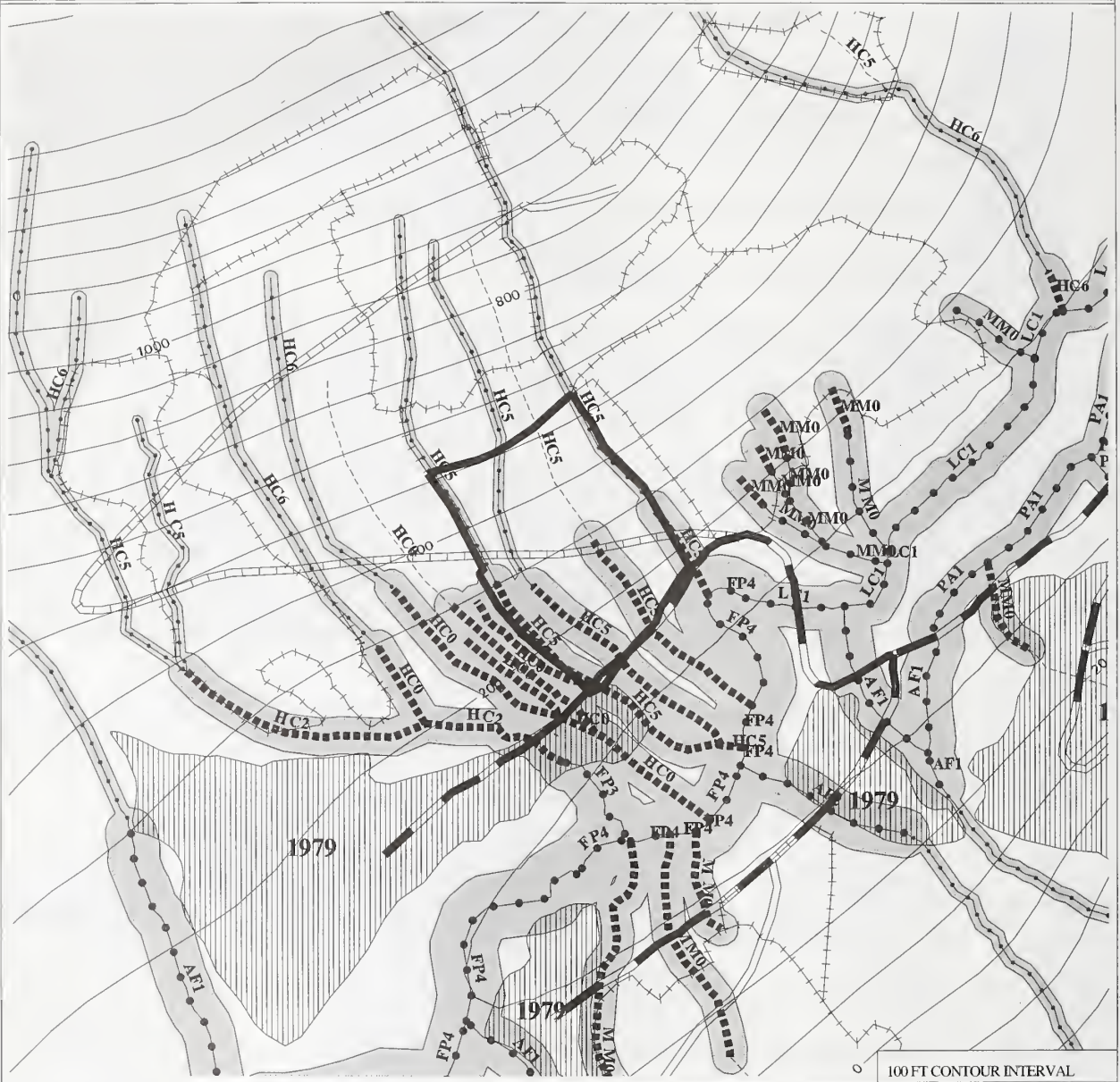
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1971 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 32 Unit 1971 Occurs in Alternatives: F

0 0.19 0.38 Miles

MAPSCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1971****Area: South Crab****Total Unit Acres - 32****Harvest Acres - 17****Total Unit Volume (MBF) - 687****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	27	186	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a decadent mixed conifer with a high percentage of cedar. The saplings are well distributed, although the majority of the hemlock is unmanageable. The plant associations are mountain hemlock - blueberry, mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. cover is 70%; forbs cover is 40%. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of two smaller Class I and II, category A streams within the unit and two larger Class I/II streams along the NE and SW boundaries that become Class III, category B streams farther uphill. Stream on SW boundary is Class II several hundred feet uphill of the planned road (further than displayed on map). Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). The extreme lower end of the larger stream along the NE boundary is an AF1 channel down by the old road, and requires a minimum 140-ft buffer here. One of the smaller streams near center of unit is borderline Class III/IV channel. As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III, HC5 channels. The other small Class I/II stream near center of unit is a class IV, category C stream uphill; protect as per BMP 13.16. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present, and the 50% harvest prescription.

Soils - none

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during issue development as having a high level of concern for the scenic resource. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan of through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternative F - The recommended treatment is uneven-aged management using 50% selection. In addition, there are no cut stream buffers in the lower half of the unit. Refer to Streamcourse Protection notes above for extent and location of stream buffers. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: W.R. Dougan; G. M. Killinger, S. Jacobsen 7/11/97; Stelick & crew 9/97.

Finger Mountain Planning Area**VCU: 233****Unit: 1973****Area: South Crab****Total Unit Acres - 36****Harvest Acres - 31****Total Unit Volume (MBF) -571****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	85	485	cable	even-age	clearcut w/reserves
F	42	242	heli	uneven	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a decadent mixed conifer with a high percentage of cedar. The saplings are well distributed, although the majority of the hemlock is unmanageable. The plant associations are mountain hemlock - blueberry, mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. cover is 70%; forbs cover is 40%. Windthrow hazard is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II, category A streams along the lower boundary, and along the NE (HC0/HC6 channels) and SW (HC2 channel) boundaries that become Class III, category B streams further uphill. Stream on NE boundary is Class II up to the planned road (farther than displayed on map). Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III, HC5 & HC6 channels. Protect class IV, category C streams as per BMP 13.16. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present.

Soils - Ensure that partial suspension is maintained over the steep slopes along the backline in order protect slope stability and reduce the risk of a landslide.

Wildlife - none

Visuals - This hillside was identified during scoping as having a high level of concern for the scenic resource. In Alternative F this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan of through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternatives B and D - Recommended treatment is clearcut with reserves. The reserves are located in the stream buffers. The yarding system is a running skyline off Road 75607.

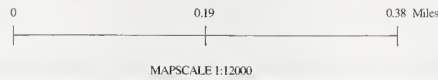
Alternative F - Recommended treatment is uneven-aged management using 50% selection. In addition there are no cut stream buffers. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: S. Godfrey, P. Matter, E. Dow 9/94; W.R. Dougan; W.R. Lorenz 7/94

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1976 QUAD(s): SITCSNE
 TOTAL UNIT ACRES: 30 Unit 1976 Occurs in Alternatives: B D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1976****Area: South Crab****Total Unit Acres - 30****Harvest Acres - 27****Total Unit Volume (MBF) -580****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	89	517	cable	even-age	clearcut w/reserves
F	45	259	heli	uneven	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a decadent mixed conifer with a high percentage of cedar. The saplings are well distributed, although the majority of the hemlock is unmanageable. The plant associations are mountain hemlock - blueberry, mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. cover is 70%; forbs cover is 40%. Windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of three Class III, HC5 channels, in the center of unit and along the NE boundary. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present. Protect Class IV, category C streams as per BMP 13.16.

Soils - Partial suspension required throughout the unit in order to help maintain slope stability and reduce the risk of a landslide.

Wildlife - none

Visuals - This hillside was identified during scoping as having a high level of concern for the scenic resource. In Alternative F this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan of through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

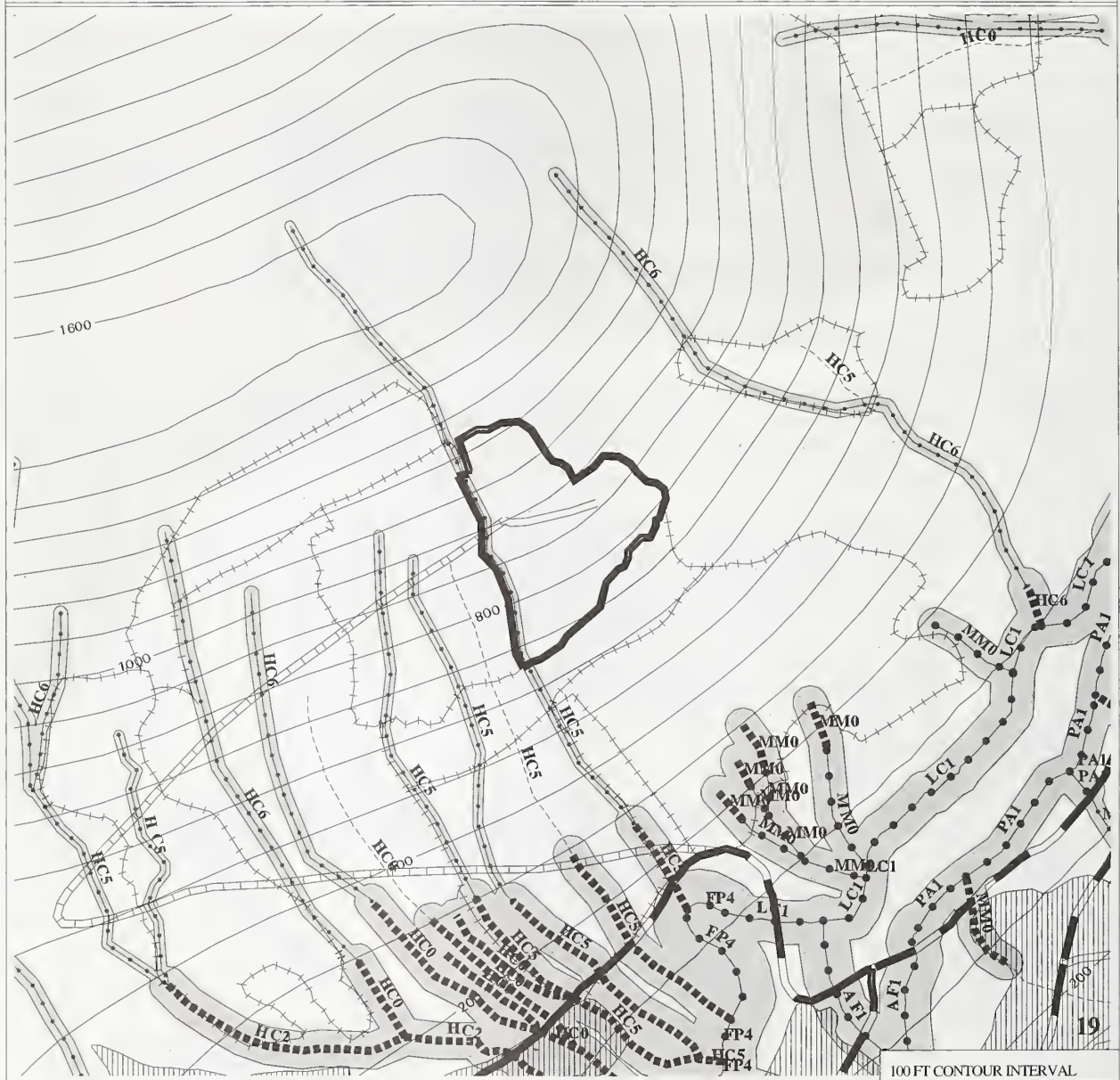
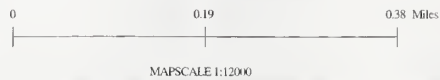
Alternatives B and D - Recommended treatment is clearcut with reserves. The reserves are located in the stream buffers. The yarding system is running skyline off Road 75607.

Alternative F - Recommended treatment is uneven-aged management using 50% selection. In addition, there are two no-cut stream buffers. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: S. Godfrey 7/94; G. Killinger, S. Jacoben 7/97; W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1977 QUAD(s): SITC5NE
TOTAL UNIT ACRES: 22 Unit 1977 Occurs in Alternatives: B D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1977****Area: South Crab****Total Unit Acres - 22****Harvest Acres - 20****Total Unit Volume (MBF) -486****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	92	445	cable	even-age	clearcut w/reserves
F	46	222	heli	uneven	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is a decadent mixed conifer with a high percentage of cedar. The saplings are well distributed, although the majority of the hemlock is unmanageable. The plant associations are mountain hemlock - blueberry, mixed conifer - blueberry and mixed conifer - skunk cabbage. *Vaccinium* spp. cover is 70%; forbs cover is 40%. Windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of Class III, HC5 channel along the SW boundary. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present. Protect Class IV, category C streams as per BMP 13.16.

Soils - Partial suspension required throughout the unit in order to help maintain slope stability and reduce the risk of a landslide.

Wildlife - none

Visuals - This hillside was identified during scoping as having a high level of concern for the scenic resource. In Alternative F this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan of through the use of 50% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternatives B and D - Recommended treatment is clearcut with reserves. The reserves are located in the stream buffers. The yarding system is running skyline off Road 7560.

Alternative F - Recommended treatment is uneven-aged management using 50% selection. In addition there are no cut stream buffers. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: S. Godfrey & crew 7/94; G. Killinger, S. Jacobsen 7/97; W.R. Dougan.
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Finger Mountain Planning Area**VCU: 233****Unit: 1980****Area: South Crab****Total Unit Acres - 59****Harvest Acres - 53****Total Unit Volume (MBF) -1,139****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B, D, F & H	63	722	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - The stand is mixed conifer, very decadent with ragged, poor crowns. The understory is scattered, predominantly in canopy gaps. Understory also has poor form and vigor. The *Vaccinium* spp. cover is 40% to 70%. The windthrow hazard is moderate to high.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of three smaller Class I and II, MM0 stream channels along the lower and SW boundaries. Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III, category B stream near SW boundary channel, and feather along boundary if necessary for windfirmness. Windfirmness along fish stream buffers is not a concern due to mix of smaller tree sizes present in that area. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife -none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives B, D, F, and H - The recommended treatment is clearcut with reserves. The reserves will be located in the stream buffers. Refer to Streamcourse Protection notes above for extent and location of buffers. The yarding systems are running skyline and swing off a temporary road.

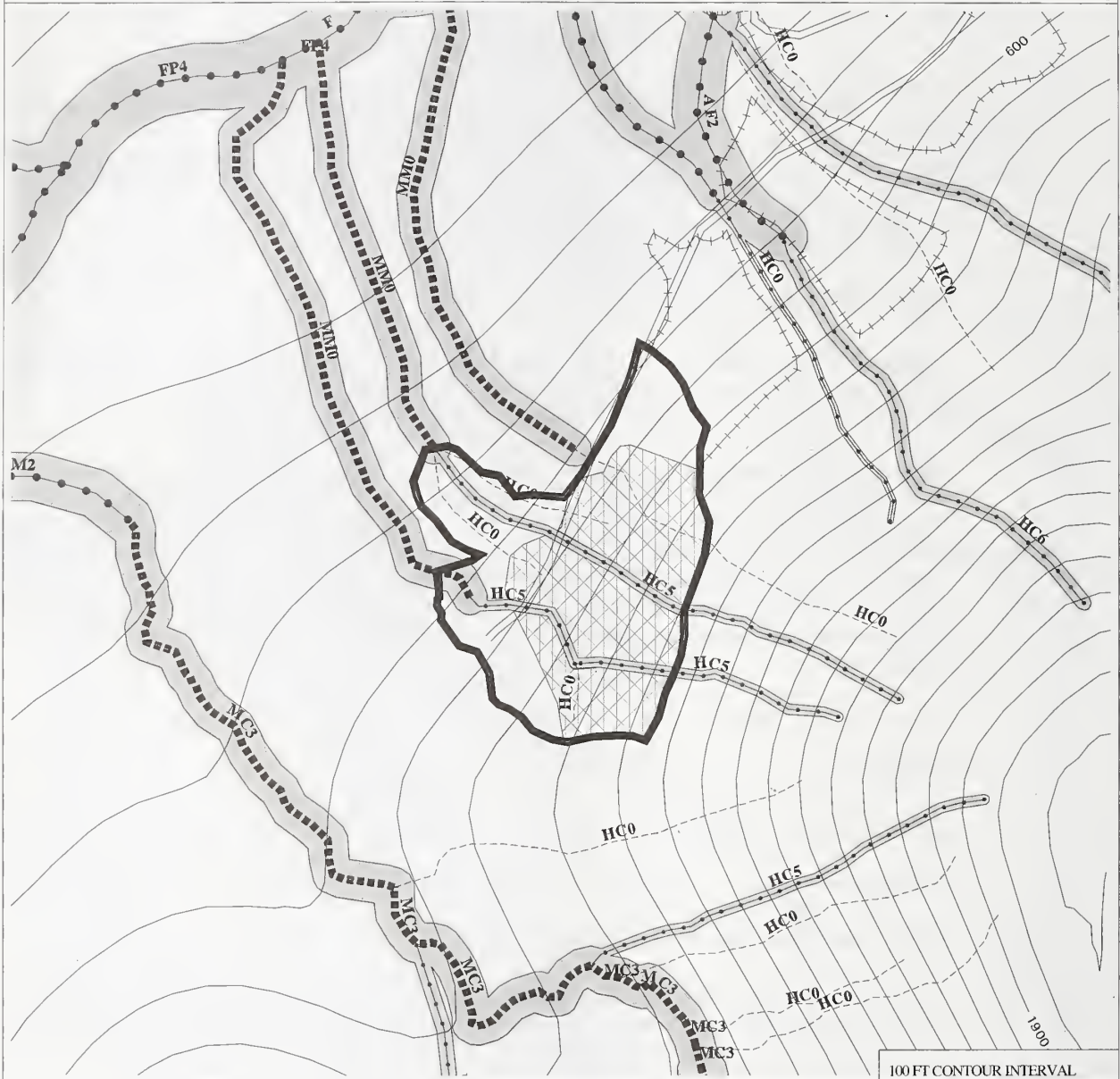
Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 6/19/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1981 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 53 Unit 1981 Occurs in Alternatives: B



MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1981****Area: South Crab****Total Unit Acres - 53****Harvest Acres - 48****Total Unit Volume (MBF) -1,711****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B	81	1,392	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This unit is a mixed conifer stand, most of it uneven aged and overmature. Some areas contain a high percentage of cedar. The understory is generally of poor form and vigor and sparsely stocked. The *Vaccinium* spp. cover is 40% to 70%. The plant association is mixed conifer - blueberry. The windthrow hazard is low.

Streamcourse Protection - Specialists recommended during layout to identify and flag boundaries of three smaller Class II, MM0 stream channels along the lower SW boundary. Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of two Class III, category B streams in SW half of unit. These streams fork farther uphill, with additional Class IV segments probable. Several other Class IV streams are present in the unit, and at least one in the N half of unit may require split yarding due to incision depth. Protect Class IV, category C streams as per BMP 13.16. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present. Keep landings away from streams to protect incised stream channels.

Soils - none

Wildlife

The unit contains 31 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

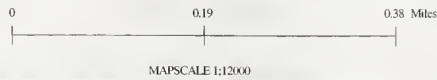
Alternative B - The recommended treatment is clearcut with reserves. There are reserves located in the stream buffers. The area of high marten habitat will leave reserves in accordance with the Forest Plan standards and guidelines for marten. The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan, G.M. Killinger & crew 6/19/97; L.A. Winn & crew 7/97; G. Killinger, s. Jacobsen 7/97; E. Dow, B. Beall 9/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1983 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 8 Unit 1983 Occurs in Alternatives: D F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1983****Area: South Crab****Total Unit Acres - 8****Harvest Acres - 7****Total Unit Volume (MBF) - 100****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F & H	97	97	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This unit is a mixed conifer stand, most of it uneven aged and overmature. The understory is generally of poor form and vigor and sparsely stocked. The *Vaccinium* spp. cover is 40% to 70%. The plant association is mixed conifer - blueberry. The windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of several smaller Class I and II, category A stream channels along the lower and SW boundaries. Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of larger Class III, category B, AF1 channel along NE boundary. Windfirmness along lower unit stream buffers is not a concern due to mix of smaller tree sizes present in that area. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - none

Visuals -none

Heritage -none

III. Integrated Harvest Prescription

Alternatives D, F, and H - The recommended treatment is even-age, clearcut with reserves. The reserves are located in the stream buffer in the west corner of the unit. The yarding system is swing off Road 7566 and a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 6/19/97; B. Beall, E. Dow 9/97.
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FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1984 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 17 Unit 1984 Occurs in Alternatives: D F

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1984****Area: South Crab****Total Unit Acres - 17****Harvest Acres - 14****Total Unit Volume (MBF) - 428****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F & H	85	365	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This unit is a mixed conifer stand; most of it is uneven aged and overmature. The understory is generally of poor form and vigor and sparsely stocked. The *Vaccinium* spp. cover is 40% to 70%. The plant association is mixed conifer - blueberry. The windthrow hazard is moderate.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II AF2 channel along the lower SW side of unit. Maintain equal to or greater than 140 ft. buffer along Class I/II, category A stream as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of larger Class III, category B, HC6 and HC6/AF2 channels along NE and SW boundaries. If stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - The unit contains 2 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives D, F, and H - The recommended treatment is even-age, clearcut with reserves. The reserves are located both in the stream buffer and in the area of high marten habitat. The reserves will be left in accordance with the Forest Plan standards and guidelines for martens and streams. The yarding systems are shovel and slackline off a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 6/19/97; L.A. Winn & crew 7/97; E. Dow, B. Beall 9/97.

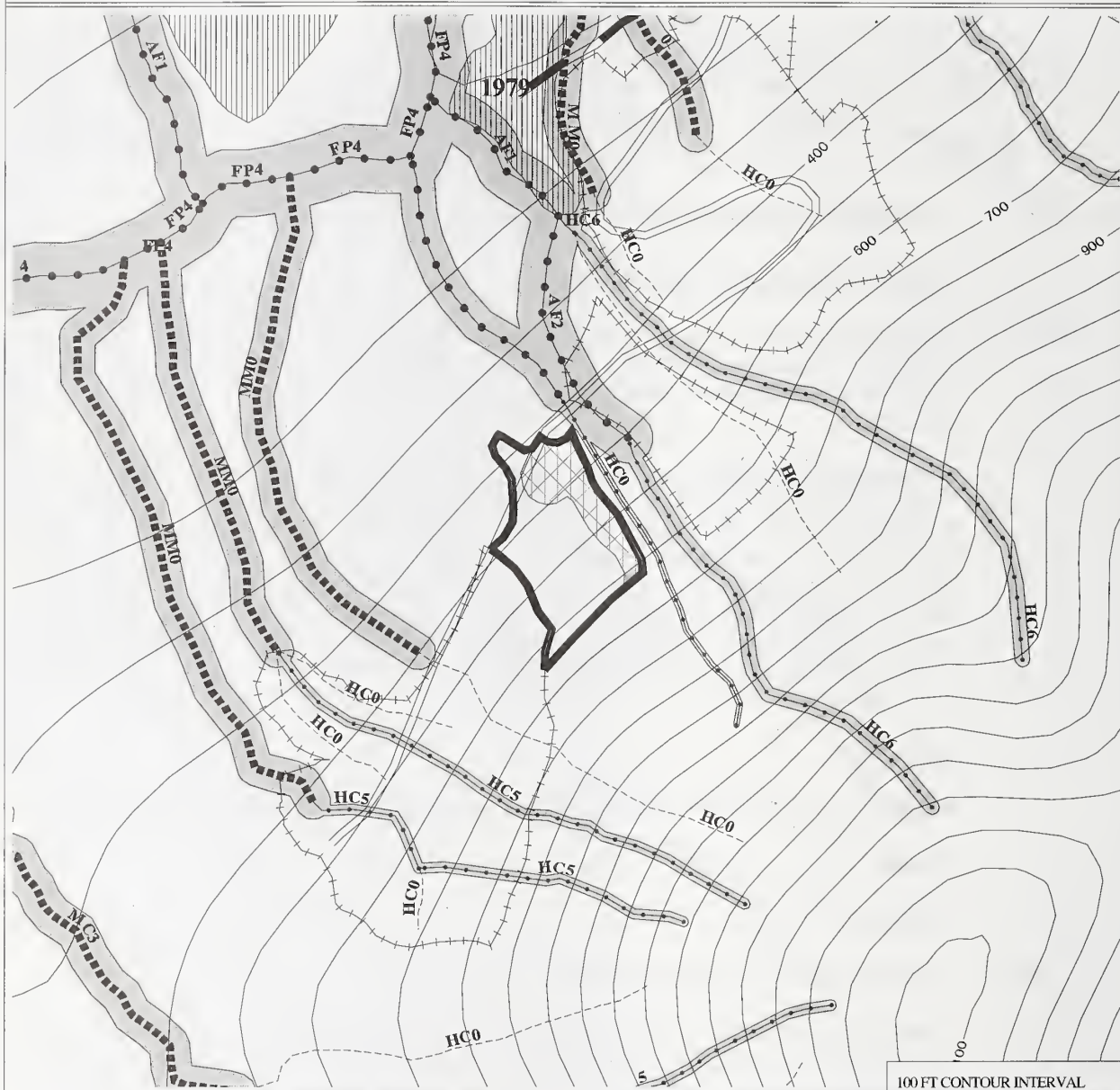
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1985 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 14 Unit 1985 Occurs in Alternatives: D F

0 0.19 0.38 Miles

MAPSCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1985****Area: South Crab****Total Unit Acres - 14****Harvest Acres - 14****Total Unit Volume (MBF) - 400****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F & H	95	380	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This is a mountain hemlock and mixed conifer stand. The trees are overmature. The understory is sparse and has poor form and vigor. The *Vaccinium* spp. cover is 40% to 70%. The plant association is mixed conifer - blueberry and mountain hemlock - blueberry. The windthrow hazard is moderate.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of larger Class III, category B, HC0/HC6 channels along NE boundary. If stream buffers are large trees next to harvest area, recommend feathering (remove larger trees, retain smaller trees) in area adjacent to stream buffer to increase probability that riparian buffer will remain windfirm. Protect Class IV, category C streams as per BMP 13.16.

Soils - This unit was reviewed in the field for concerns with steep and potentially unstable areas. Along the backline, the slopes are as steep as 60 percent. Maintaining partial suspension during yarding over these areas will help maintain root strength and soil stability after harvest is complete.

Wildlife - The unit contains 5 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternatives D, F, and H - The recommended treatment is even-age, clearcut with reserves. The reserves will be left in the high marten habitat area, in accordance with the Forest Plan standards and guidelines. The yarding system is running skyline off a temporary road.

Resource Review Completed By: W.R. Dougan; G.M. Killinger & crew 6/19/97; L.A. Winn & crew 7/16/97; L.A. Winn & crew 7/29/97.

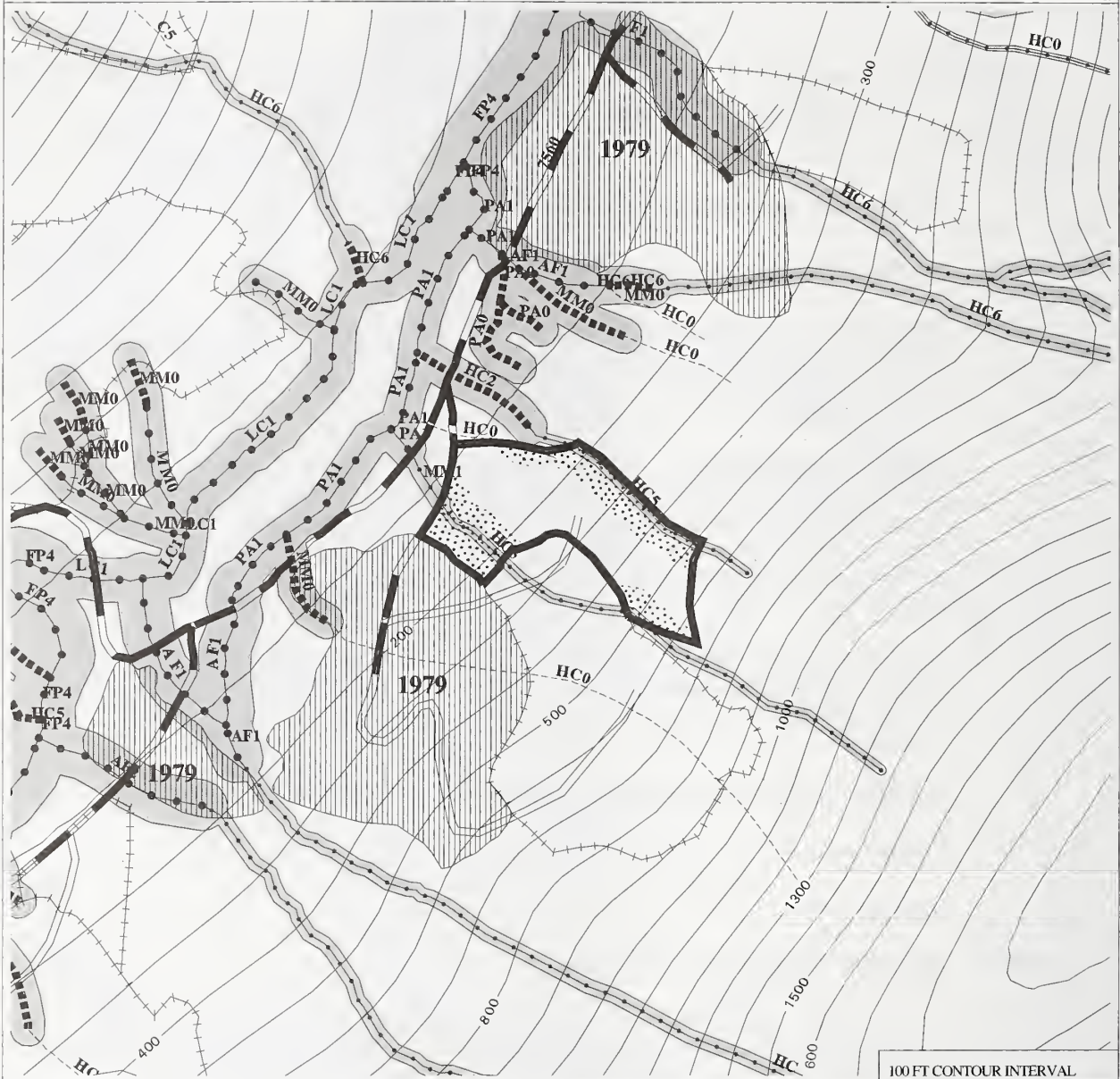
FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1990B QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 22 Unit 1990B Occurs in Alternatives: D F

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1990B****Area: South Crab****Total Unit Acres - 22****Harvest Acres - 18****Total Unit Volume (MBF) - 390****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F & H	73	285	cable	two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is predominantly western hemlock with a minor component of cedar. The trees are of generally poor vigor and form, there are a lot of dead tops and windthrow. The understory is unmanageable, also due to poor form and vigor. The *Vaccinium* spp. cover is 40% to 70%. The windthrow hazard is moderate to high.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of smaller Class I and II, MM0 stream channel along the lower NW boundary, and lower Class I and II downstream boundaries of the larger channels along the NW and SW sides of unit. Maintain = or > 100-ft buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, place unit boundary at or above slope break of Class III, category B streams along SW and NW boundaries. Feather along boundaries if necessary for windfirmness. Protect Class IV, category C streams as per BMP 13.16.

Soils - In unit design, the backline has been lowered slightly to avoid steep slopes and cliffs; it should not be raised during unit layout. Windfirm buffers along the south and east sides of the unit (see Streamcourse Protection above) are particularly important in maintaining soil stability along these drainages.

Wildlife - none

Visuals - none

Heritage -none

III. Integrated Harvest Prescription

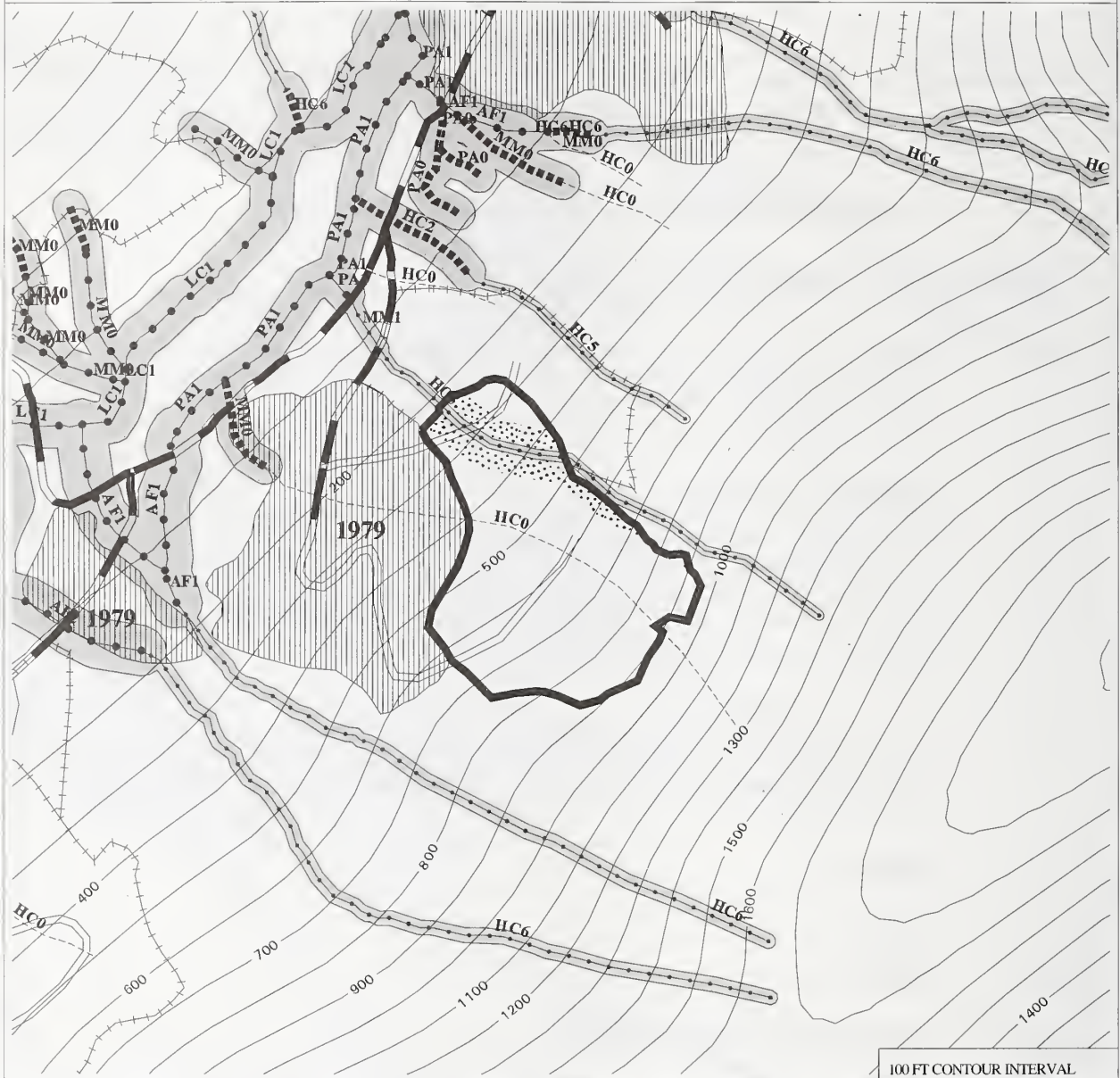
Alternatives D, F, and H - The recommended treatment is two-age, clearcut with reserves. The reserves will be located in the stream buffers. In addition, 30% of the volume of the smaller diameter classes will be left in the wind management zones. The yarding systems are running skyline and slackline off Road 7560 and a temporary road.

Resource Review Completed By: G.M. Killinger & crew 6/19/97; L.A. Winn & crew 7/97.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 1992 QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 42 Unit 1992 Occurs in Alternatives: B D F

0 0.19 0.38 Miles
 MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 1992****Area: South Crab****Total Unit Acres - 42****Harvest Acres - 40****Total Unit Volume (MBF) - 962****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B, D, F & H	93	899	cable	even-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is predominantly western hemlock with a minor component of cedar. The trees are of generally poor vigor and form: there are a lot of dead tops and windthrow. The understory is unmanageable, also due to poor form and vigor. The *Vaccinium* spp. cover is 40% to 70%. The windthrow hazard is moderate to high.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of Class III, category B, HC channel along N boundary. Feather along boundary where necessary for windfirmness. Protect Class IV, category C streams as per BMP 13.16. The deeply incised, Class IV stream in the middle of the unit likely will require split yarding.

Soils - Attaining partial suspension during yarding will be important to protect thin soils over boulders, especially in the south side of the unit.

Wildlife - none

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

Alternative B, D, F, and H - The recommended treatment is clearcut with reserves. There is a stream that has a no cut buffer on it. Surrounding the buffer is a wind management zone that will have 30% of the volume left as reserves. The yarding system is running skyline off two temporary roads.

Resource Review Completed By: D. Hutson & crew 10/93; G.M. Killinger & crew 6/19/97; L.A. Winn & crew 7/97; W.R. Dougan.

VCU: 233 UNIT NUMBER: 2000 QUAD(s): SITC5NE

TOTAL UNIT ACRES: 16 Unit 2000 Occurs in Alternatives: D F

0 0.19 0.38 Miles

MAPSCALE 1:12000

100 100 300 200

1978 1979

100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT WITH DATE HARVESTED	CLASS III STREAM	HC6
UNIT BOUNDARY	CLASS IV STREAM	
ADJACENT UNIT	STREAM CHANNEL TYPE	
NEW SPEC. ROAD	MARTEN HABITAT—HIGH VALUE	
TEMPORARY ROAD	SALTWATER AND LAKES	
EXISTING SPEC. ROAD	STREAM RIPARIAN BUFFER	
CLASS I STREAM	WIND MANAGEMENT ZONE	
CLASS II STREAM	ISOLATED TIMBER	
	OLD GROWTH RESERVE	

AREA LOCATOR

Finger Mountain Planning Area**VCU: 233****Unit: 2000****Area: South Crab****Total Unit Acres - 16****Harvest Acres - 16****Total Unit Volume (MBF) - 443****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D, F & H	92	409	cable	two-age	clearcut w/reserves

I. Forest Plan Management Prescription - Timber Production**II. Resource Descriptions**

Vegetation - Overstory description: Western hemlock and yellow cedar in an even mix with a few spruce. Yellow cedar has quantities of #2 grade sawlogs. There are also a few mountain hemlocks. With higher slope position, there is an increase in cedar component to where cedar is approximately 75% of the volume. Lower slope positions the cedar percentage declines to about 20%. Majority of unit is approximately 50% cedar. The potential windthrow hazard is moderate. Understory description: Brush layer is dominated by *Vaccinium* spp. Over some of the area, *Menziesia* spp. cover is greater than 25%. Conifer regeneration is adequate in openings. Where poles/saplings exist under a more continuous overstory canopy, they are flat topped. Cedar regeneration is almost absent. Skunk cabbage is present here and there, not restricted to the draws. Some devil's club and deer fern is quite common (2-3 % cover).

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of larger Class III, category B, HC6 channel along S boundary, and smaller Class III channel near north boundary. Feather along boundary where necessary for windfirmness. Protect Class IV, category C streams as per BMP 13.16.

Soils - Ensure that partial suspension is maintained in steep areas along backline in order to maintain soil stability. A soil scientist should review this unit during layout.

Wildlife - The unit contains 8 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - none

Heritage - none

III. Integrated Harvest Prescription

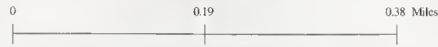
The recommended harvest treatment is clearcut with reserves. Leave reserves for marten habitat in southern half where the area is mapped as high value. If possible, small clumps of reserves for marten habitat could also protect small patches of sapling/pole timber. Protecting this currently unmerchantable material will further enhance post-harvest structural diversity. Hand plant yellow cedar following harvest. The yarding system is a slackline off a temporary road.

Resource Review Completed By: G.M. Killinger & crew 6/19/97; K.W. Barkhau & crew 8/97.
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FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 2021 QUAD(s): SITC5NE/SITC4NW
 TOTAL UNIT ACRES: 16 Unit 2021 Occurs in Alternatives: D F



MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 2021****Area: South Crab****Total Unit Acres - 16****Harvest Acres - 16****Total Unit Volume (MBF) - 367****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
D & F	25	92	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Modified Landscape and Timber Production**II. Pertinent Resource Information**

Vegetation - This is a western hemlock stand. The trees are large (20+” dbh) and in good shape. There is a small amount of rot and broken tops. The midstory is comprised of 4” to 12” dbh poles scattered throughout the stand. The saplings and seedlings are of poor form and vigor. The *Vaccinium* spp. cover is 30% to 50%. The plant association is western hemlock - blueberry and western hemlock - rusty Menziesia. The windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, insure unit boundary is at or above slope break of larger Class III, category B, HC6 channels near E and W boundaries. No other concerns.

Soils - none

Wildlife - none

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection.

Heritage - none

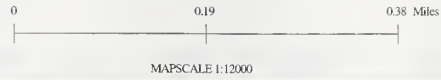
III. Integrated Harvest Prescription

Alternatives D and F - The recommended treatment is 25% selection. Removing 25% of the volume across all diameter classes will mitigate any visual concerns. The yarding system is helicopter to a landing on Road 7560.

Resource Review Completed By: Stelick & crew 8/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 2030 QUAD(s): SITC4NW
TOTAL UNIT ACRES: 21 Unit 2030 Occurs in Alternatives: B D F



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 2030****Area: Fog Creek****Total Unit Acres - 21****Harvest Acres - 20****Total Unit Volume (MBF) - 488****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B, D & H	95	462	cable	even-age	clearcut w/reserves
F	24	116	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is a hemlock and cedar mix. The trees are mostly 14" to 22" dbh with scattered larger trees. The trees are generally of poor vigor with dead or broken tops. There is some pini fungus in the stand. There is a uniform distribution of hemlock poles and saplings, but they have poor crowns and vigor. The plant association is mixed conifer - skunk cabbage. The windthrow potential is low.

Streamcourse Protection - Specialists needed during layout to identify and flag boundaries of Class I and II stream channels along the lower N and E boundaries. Maintain = or > 100-ft. buffer along Class I/II, category A streams, as per BMP 12.6 and the Forest Plan (4-8 to 4-11, and 4-53 to 4-73). As outlined in the Forest Plan and BMP 13.16, insure unit boundary is at or above slope break of larger Class III, category B, HC channels near E and NW boundaries. Feather along boundary where necessary for windfirmness. Protect multiple Class IV, category C streams as per BMP 13.16, and split yard as necessary.

Soils - none

Wildlife - none

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. In Alternative F, this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection. Recommend Landscape Architect input during layout and harvest in alternatives B and D.

Heritage - none

III. Integrated Harvest Prescription

Alternatives B, D, and H - the recommended treatment is even-age, clearcut with reserves. The reserves will be located along the stream buffer at the bottom of the unit. The yarding system is running skyline off Road 75602.

Alternative F - the recommended treatment is 25% selection. Taking the 25% volume across all diameter classes will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

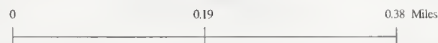
Resource Review Completed By: C. Budke & crew 9/93; G.M. Killinger & crew 9/93; G.M. Killinger, B. Light 9/17/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 2030H QUAD(s): SITC4NW

TOTAL UNIT ACRES: 15 Unit 2030H Occurs in Alternatives: F



MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 2030H****Area: Fog Creek****Total Unit Acres - 15****Harvest Acres - 15****Total Unit Volume (MBF) - 357****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	25	89	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is a hemlock and cedar mix. The trees are mostly 14" to 22" dbh with scattered larger trees. The trees are generally of poor vigor with dead or broken tops. There is some pini fungus in the stand. There is a uniform distribution of hemlock poles and saplings, but they have poor crowns and vigor. The plant association is mixed conifer - skunk cabbage. The windthrow potential is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, insure unit boundary is at or above slope break of larger Class III, category B, HC channels near E and NW boundaries. Feather along boundary where necessary for windfirmness. Protect multiple Class IV, category C streams as per BMP 13.16, and split yard as necessary.

Soils - none

Wildlife - none

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection.

Heritage - none

III. Integrated Harvest Prescription

Alternative F - The recommended treatment is 25% selection. Taking the 25% volume across all diameter classes will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: W.R. Dougan.
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FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 2040A QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 10 Unit 2040A Occurs in Alternatives: **B D F**

0 0.19 0.38 Miles

MAP SCALE 1:12000



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 2040A****Area: Fog Creek****Total Unit Acres - 10****Harvest Acres - 10****Total Unit Volume (MBF) - 347****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	52	181	cable	two-age	clearcut w/ reserves
F	25	86	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is mainly mountain hemlock, with some western hemlock and a small amount of cedar. There are scattered large trees with canopy gaps between them. The midstory averages 10" to 16" dbh. The understory is in poor form. The *Vaccinium* spp. cover is 50%. The plant association is mixed conifer - blueberry. The windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, insure unit boundary is at or above slope break of Class III, category B, HC channels along the W and E boundaries. Feather along Class III stream buffers where necessary for windfirmness. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - The unit contains 8 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. In Alternative F, this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection. Recommend Landscape Architect input during layout in alternatives B and D.

Heritage - none

III. Integrated Harvest Prescription

Alternatives B and D - The recommended treatment is clearcut with reserves. The reserves are located in the high marten habitat area. The reserves will be left in accordance with the Forest Plan standards and guidelines for marten. The yarding system is running skyline off a temporary road.

Alternative F - The recommended treatment is 25% selection. Taking the 25% volume from all diameter classes will mitigate both the visual and marten concerns. The yarding system is helicopter utilizing a landing on Road 75602.

Resource Review Completed By: G.M. Killinger & crew 9/93; E. Dow & crew 10/93; G.M. Killinger, B. Light 9/17/97; W.R. Dougan, L.A. Winn, S.P. Beall 8/97.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 233/234 UNIT NUMBER: 2040B QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 70 Unit 2040B Occurs in Alternatives: B D F

0 0.19 0.38 Miles

MAP SCALE 1:12000



100 FT CONTOUR INTERVAL

EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT—HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



HC6



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 2040B****Area: Fog Creek****Total Unit Acres - 70****Harvest Acres - 49****Total Unit Volume (MBF) - 2,469****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
B & D	69	1,713	cable	even-age	clearcut w/ reserves
F	17	428	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**

Vegetation - This stand is mainly mountain hemlock, with some western hemlock and a small amount of cedar. There are scattered large trees with canopy gaps between them. The midstory averages 10 to 16" dbh. The understory is in poor form. The *Vaccinium* spp. cover is 50%. The plant association is mixed conifer - blueberry. The windthrow hazard is low.

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, insure unit boundary is at or above slope break of deeply incised, Class III, category B, HC channels. This includes three Class III streams within the unit and a larger Class III along the W boundary. The larger, deeply incised HC5 channel along the west side of the unit has some unstable sideslopes and larger trees within the V-notch. Recommend feathering (cutting larger trees and leaving smaller trees) along this Class III stream buffer to maintain windfirmness. Feather along other Class III stream buffers where necessary for windfirmness. Protect Class IV, category C streams as per BMP 13.16. The deeply incised segments of the Class IV, HC0 channel in the E third of the unit (just W of the eastern most HC5 channel) will need split yarding.

Soils - none

Wildlife - The unit contains 53 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. In Alternative F, this concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection. Recommend Landscape Architect input during layout and harvest in alternatives B and D.

Heritage - none

III. Integrated Harvest Prescription

Alternatives B and D - The recommended treatment is clearcut with reserves. The reserves are located in the high value marten habitat area and in the stream buffers. The reserves will be left in accordance with the Forest Plan standards and guides for marten and streams. The yarding system is slackline off a temporary road.

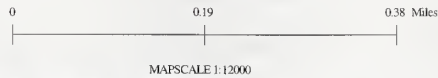
Alternative F - The recommended treatment is 25% selection. Taking the 25% volume from all diameter classes will mitigate the visual, stream buffer, wind firmness and marten concerns. The yarding system is helicopter utilizing a landing on Road 75602.

Resource Review Completed By: G.M. Killinger & crew 9/93; E. Dow & crew 10/93; G.M. Killinger 9/17/97; L.A. Winn, S.P. Beall 8/97; W.R. Dougan.

FINGER MOUNTAIN PROJECT UNIT CARD

PLANNED HARVEST UNIT MAP

VCU: 234/233 UNIT NUMBER: 6047 QUAD(s): SITC4NW
 TOTAL UNIT ACRES: 11 Unit 6047 Occurs in Alternatives: F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233/234****Unit: 6047****Area: Fog Creek****Total Unit Acres - 11****Harvest Acres - 11****Total Unit Volume (MBF) - 311****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	25	77	heli	uneven-age	25% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information****Vegetation** - none

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of Class III, category B channels. Protect Class IV, category C streams as per BMP 13.16.

Soils - none

Wildlife - The unit contains 4 acres of high value marten habitat (Forest Plan 4-118 and 4-119).

Visuals - This hillside is visible from Crab Bay and Tenakee Inlet and was identified during scoping as being visually sensitive. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 25% individual tree selection.

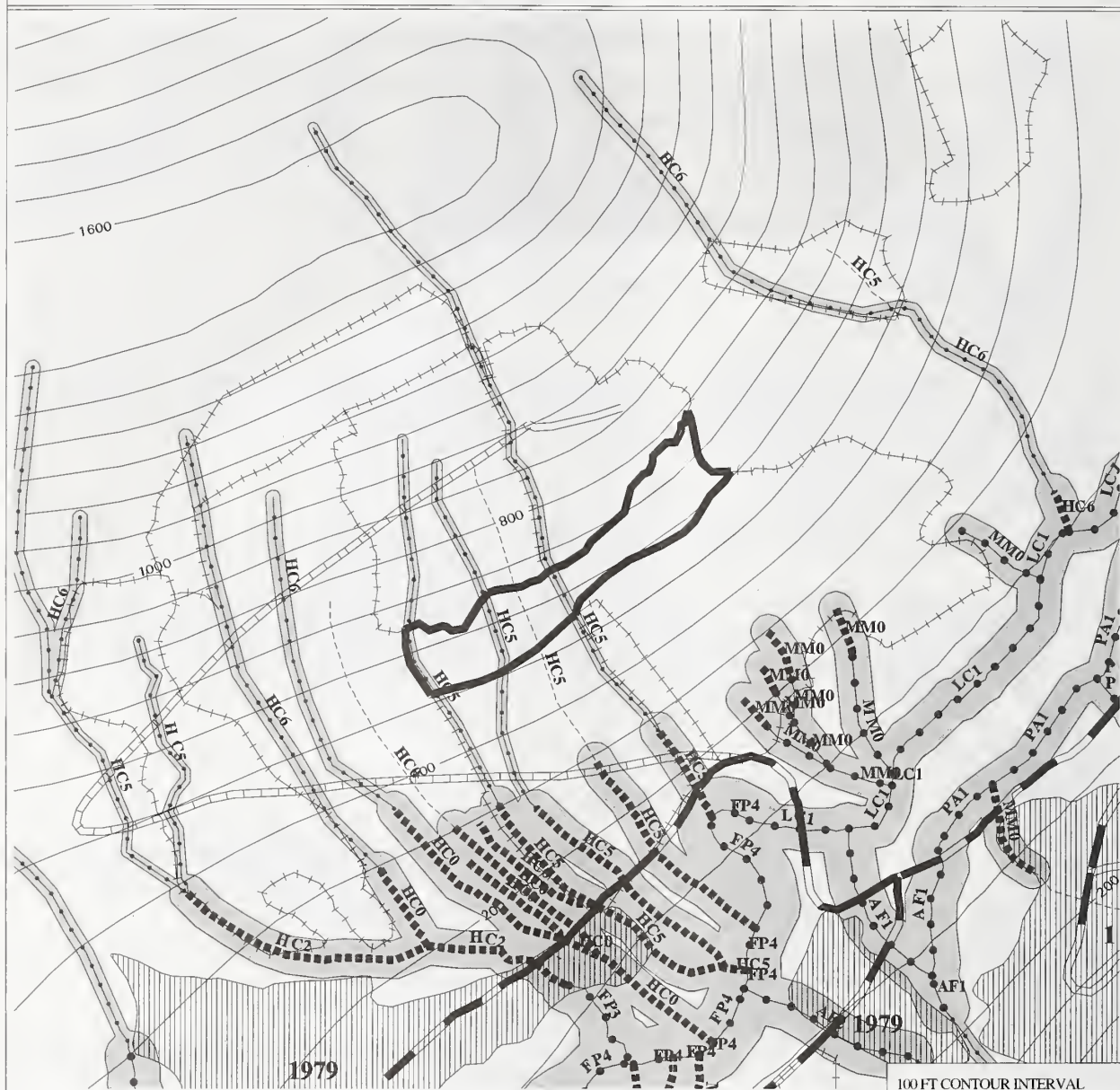
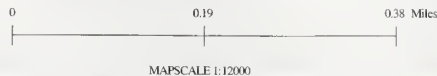
Heritage - none**III. Integrated Harvest Prescription**

Alternative F - The recommended treatment is uneven-age, 25% selection. The 25% volume will be taken from all diameter classes. This will mitigate the visual and marten concerns. The yarding system is helicopter utilizing a landing at end of Road 75651.

Resource Review Completed By: K.W. Barkhau, etc.
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 6054H QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 16 Unit 6054H Occurs in Alternatives: F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area**VCU: 233****Unit: 6054H****Area: South Crab****Total Unit Acres - 16****Harvest Acres - 14****Total Unit Volume (MBF) - 341****Alternative Summary**

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	45	152	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information****Vegetation** - none

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of three Class III, HC5 channels, in the center of unit and along the W boundary. Windfirmness along stream buffers is not a concern due to mix of smaller tree sizes present. Protect Class IV, category C streams as per BMP 13.16.

Soils - The harvest prescription is a 50% selection, which will help to maintain root strength and slope stability. Partial log suspension is required throughout the unit.

Wildlife - none

Visuals - This hillside is visible from Crab Bay and was identified during scoping as being more visually sensitive than the maximum modification visual quality objective adopted in the Forest Plan. This concern is addressed to a greater extent than is required under the maximum modification visual quality objective adopted in the Forest Plan through the use of 50% individual tree selection.

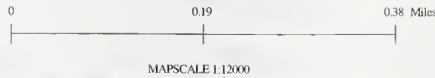
Heritage - none**III. Integrated Harvest Prescription**

Alternative F - The recommended treatment is uneven-aged management using 50% selection. In addition, there are no-cut stream buffers bisecting the unit. Refer to Streamcourse Protection notes above for the extent and location of stream buffers. This prescription will mitigate any visual concerns. The yarding system is helicopter utilizing a landing on Road 7560.

Resource Review Completed By: K.W. Barkhau (silviculture).
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FINGER MOUNTAIN PROJECT UNIT CARD PLANNED HARVEST UNIT MAP

VCU: 233 UNIT NUMBER: 6055H QUAD(s): SITC5NE
 TOTAL UNIT ACRES: 21 Unit 6055H Occurs in Alternatives: F



EXISTING HARVEST UNIT
WITH DATE HARVESTED



UNIT BOUNDARY



ADJACENT UNIT



NEW SPEC. ROAD



TEMPORARY ROAD



EXISTING SPEC. ROAD



CLASS I STREAM



CLASS II STREAM



CLASS III STREAM

CLASS IV STREAM

STREAM CHANNEL TYPE

MARTEN HABITAT-HIGH VALUE

SALTWATER AND LAKES

STREAM RIPARIAN BUFFER

WIND MANAGEMENT ZONE

ISOLATED TIMBER

OLD GROWTH RESERVE



AREA LOCATOR



Finger Mountain Planning Area

VCU: 233

Unit: 6055H

Area: South Crab

Total Unit Acres - 21

Harvest Acres - 21

Total Unit Volume (MBF) - 497

Alternative Summary

Alternative	Percent Harvest	Harvest Volume	Logging System	Management System	Harvest Method
F	48	237	heli	uneven-age	50% selection

I. Forest Plan Management Prescription - Timber Production**II. Pertinent Resource Information**Vegetation - none

Streamcourse Protection - As outlined in the Forest Plan (4-8 to 4-11, and 4-53 to 4-73) and BMP 13.16, place unit boundary at or above slope break of Class III, HC channels. Protect Class IV, category C streams as per BMP 13.16.

Soils - noneWildlife - none

Visuals - This is visible from Crab Bay and was identified during scoping as being visually sensitive. This concern is addressed to a greater extent than is required under the maximum modification visual quality objectives adopted in the Forest Plan through the use of 50% individual tree selection.

Heritage - none**III. Integrated Harvest Prescription**

Alternative F - The recommended treatment is uneven-aged management using 50% selection. In addition, there is one no-cut stream buffer. Refer to Streamcourse Protection notes above for the extent and location of stream buffers. This prescription will mitigate any visual concerns.

Resource Review Completed By: K.W. Barkhau, etc.
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Appendix C

Road Cards and Road Management Objectives (RMOs)

Appendix C
List of Symbols
and Abbreviations

Appendix C

Road Cards and Road Management Objectives (RMOs)

Introduction

This appendix is comprised of the road cards for roads associated with the Finger Mountain Timber Sale(s) Project, Road Management Objective maps for each of the alternatives, and maps displaying stream crossings in relation to project area roads. Each road card lists road-specific information, including the management objectives specified for each road. The information below is intended to provide assistance in reading and understanding the road cards that follow.

Road Card Information

Functional Class (listed under General Design Criteria and Elements): this term refers to the way in which a road services land and resource management needs and describes the character of service it provides.

- Arterial road. Provides service to large land areas and usually connects with other arterial roads or public highways. (Due to the remoteness of the Finger Mountain Timber Sale(s) Project Area, and the fact that the road systems planned for the area are small and not interconnected, no roads are classified as arterials.)
- Collector road. Serves smaller land areas than an arterial road. Usually connects arterial roads to local roads or terminal facilities.
- Local road. Connects terminal facilities with other local, collector, or arterial roads, and public highways. Usually local roads are for a single purpose, such as timber harvest.

Service Life (listed under General Design Criteria and Elements): This term refers to the length of time a facility is expected to provide a specified service.

- Long-term. Service life of at least ten years.
- Intermittent. Operated for periodic service and closed for more than one year between periods of use.

Traffic Service Level (listed under General Design Criteria and Elements): The traffic service level assigned is based on significant traffic characteristics and operating conditions for a road. It reflects factors such as speed, travel time, traffic interruptions, freedom to maneuver, safety, driver comfort, convenience, and operating costs.

- **C** – Traffic flow is slowed by road condition. Traffic volumes are frequently controlled as the capacity is reached. Accommodates mixed traffic (all vehicle types). Meets minimum safety requirements. Topographic features generally dictate alignment. Travel efficiency is traded for lower construction costs. Road surface may not be stable under all traffic or weather conditions during the normal use season.
- **D** – Traffic flow is slow or may be blocked by an activity. Traffic volumes are intermittent and usually controlled; volume is limited to that associated with the single purpose (e.g., timber harvest). Not designed for mixed traffic. Need for safety protection is minimized by slow speeds and strict traffic controls. Alignment is dictated by topography. Road surface is rough and irregular.

Operational Maintenance Level and Objective Maintenance Level (both are listed under Maintenance Criteria): The Operational Maintenance Level describes the level of service provided by, and maintenance required for, a road during harvest operations. In contrast, the Objective Maintenance Level describes the level of service provided by, and maintenance required for, a specific road upon completion of harvest activities. Typically, roads are maintained at a higher level during harvest operations than they are following harvest operations to accommodate heavier levels of use.

- Level 1. Normally assigned to intermittent service roads during the time they are closed to vehicular traffic. In the Finger Mountain Timber Sale(s) RMO summary tables, this level also applies to short-term roads after the purpose for which they were constructed is completed. At this level, drainage structures are removed, the roadbed is waterbarred, and basic custodial maintenance is performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities.
- Level 2. Assigned to roads needed by high clearance vehicles between periods of harvest. Planned post-harvest vehicle traffic in the Finger Mountain Timber Sale(s) Project Area is expected to be either high clearance vehicles (HCV) or all-terrain vehicles (ATV), to accomplish administrative and recreation access objectives. Roads will be logged out and brushed as necessary to provide passage for ATVs. The road prism will be maintained to provide for passage of high clearance vehicles. Barricades will be placed at the entrance of each road maintained at this level, for ATV access, to effectively block vehicles greater than 50" in width.

Maintenance Narrative (listed under Maintenance Criteria): The maintenance narrative includes a discussion of how the road is to be maintained following harvest. Each road will be managed according to one of the following three strategies.

- Active. Provide frequent cleanout of ditches and catchbasins to assure controlled drainage. Control roadside brush to maintain sight distance. Grade as needed to maintain crown and running surface.
- Storm Proof. Provide waterbars, rolling dips, outsloping, etc., to assure controlled runoff until any needed maintenance can be performed on the primary drainage system. Control roadside brush to maintain passage.
- Storage. Remove or bypass all drainage structures to restore natural drainage patterns, add water-bars as needed to control runoff, re-vegetate.

Traffic Management Strategies: This section describes methods employed on forest development roads to control traffic. Used to prevent damage to the roadway, to abate unsafe traffic conditions or to control use to meet other specific management direction such as protecting wildlife habitat or achieving semi-primitive recreation objectives.

- Encourage. Encourage public use by means of appropriate signing, public notification, and active maintenance of the road prism.
- Accept. Public use is allowed but not encouraged, while road is maintained for administrative access.
- Discourage. Public access is discouraged by means of allowing alder growth at road entrance, non-removal of blowdown, or road prism deterioration within acceptable environmental limits. Road may also be signed to discourage use. Example: "Not Maintained for Public Traffic."
- Prohibit. Public access is prohibited by a road order (i.e., CFR closure). Implementation of this strategy on remote road systems may require the installation of gates, in addition to public notification and appropriate signing.
- Eliminate. Road is physically blocked after sale traffic. Where prescribed for long-term intermittent roads, this strategy is achieved by means of placement of impassable barricades at road entrances. On short-term roads, removal of drainage structures effectively blocks traffic.

Stream Crossing Number/Milepost (listed in the stream crossing tables): After publishing the DEIS, additional road surveys were completed to gather information on stream crossing sites on all existing roads and most proposed roads in this area. This addressed the need for site-specific information to be displayed in the Final EIS. Many of these stream crossing sites are smaller Class I and II streams that are not depicted on the road card maps, which primarily show larger streams or crossings (aerial photo interpretable) that are depicted on the maps by numbers. We have placed surveyed milepost station distances (MP) in parentheses with numbers for all crossings shown on the maps. Many smaller stream crossing sites are not depicted on the road card maps but the milepost distance is displayed on the road cards along with specific crossing information in the tables. Smaller stream crossings are not displayed on the maps because it is difficult to accurately locate them on the larger scale maps used in the EIS document. The Habitat Division of the Alaska Department of Fish and Game and the Alaska Department of Environmental Conservation were consulted on this approach, and both concurred that there is no need to show the location of all smaller stream crossing sites on the road maps, as long as the crossing information is displayed in the tables. Stream crossings are listed by milepost and in order of occurrence in the road card tables. The relative location of the smaller crossings can be determined by the position of such crossings between those stream crossing sites displayed on the maps.

Source Code (listed in the stream crossing tables):

- 1 – site specific stream channel information collected during field review
- 2 – updating from a general in-field walk-through
- 3 – average channel type information obtained from the Tongass geographic information system (GIS) stream layer

BMPs (listed in the stream crossing tables):

- * Applicable BMPs for Class I and II stream crossings include: BMP 14.3, 14.5, 14.6, 14.8, 14.9, 14.10, 14.11, 14.12, 14.14, and 14.17.
- ** Applicable BMPs for Class III stream crossings include: BMP 14.3, 14.5, 14.6 (when risk is high to impact downstream fish and habitat), 14.8, 14.9, 14.10, 14.11, 14.12, 14.14, and 14.17.
- *** Applicable BMPs for bridges and other major crossing structures include BMP 14.15 in addition to those identified above for Class I, II, and III streams.

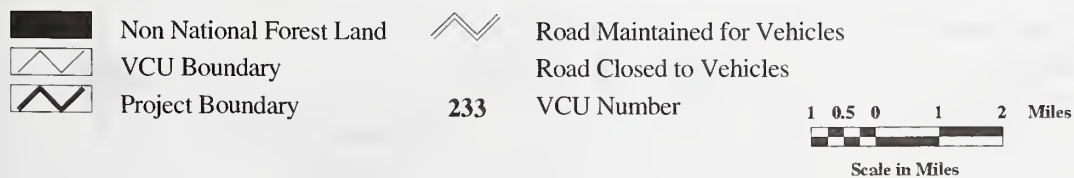
Additional Resource Information: This section describes specific road management concerns noted by resource specialists during the planning process.

Road Cards and Road Management Objectives (RMOs) Maps

Finger Mountain Road Management Objectives Existing Condition








Finger Mountain Road Management Objectives Alternative B

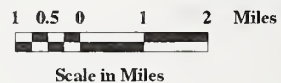


Finger Mountain Road Management Objectives Alternative D






-  Non National Forest Land
-  VCU Boundary
-  Project Boundary



-  Road Maintained for Vehicles
-  Road Closed to Vehicles
- 233** VCU Number



Finger Mountain Road Management Objectives Alternative F



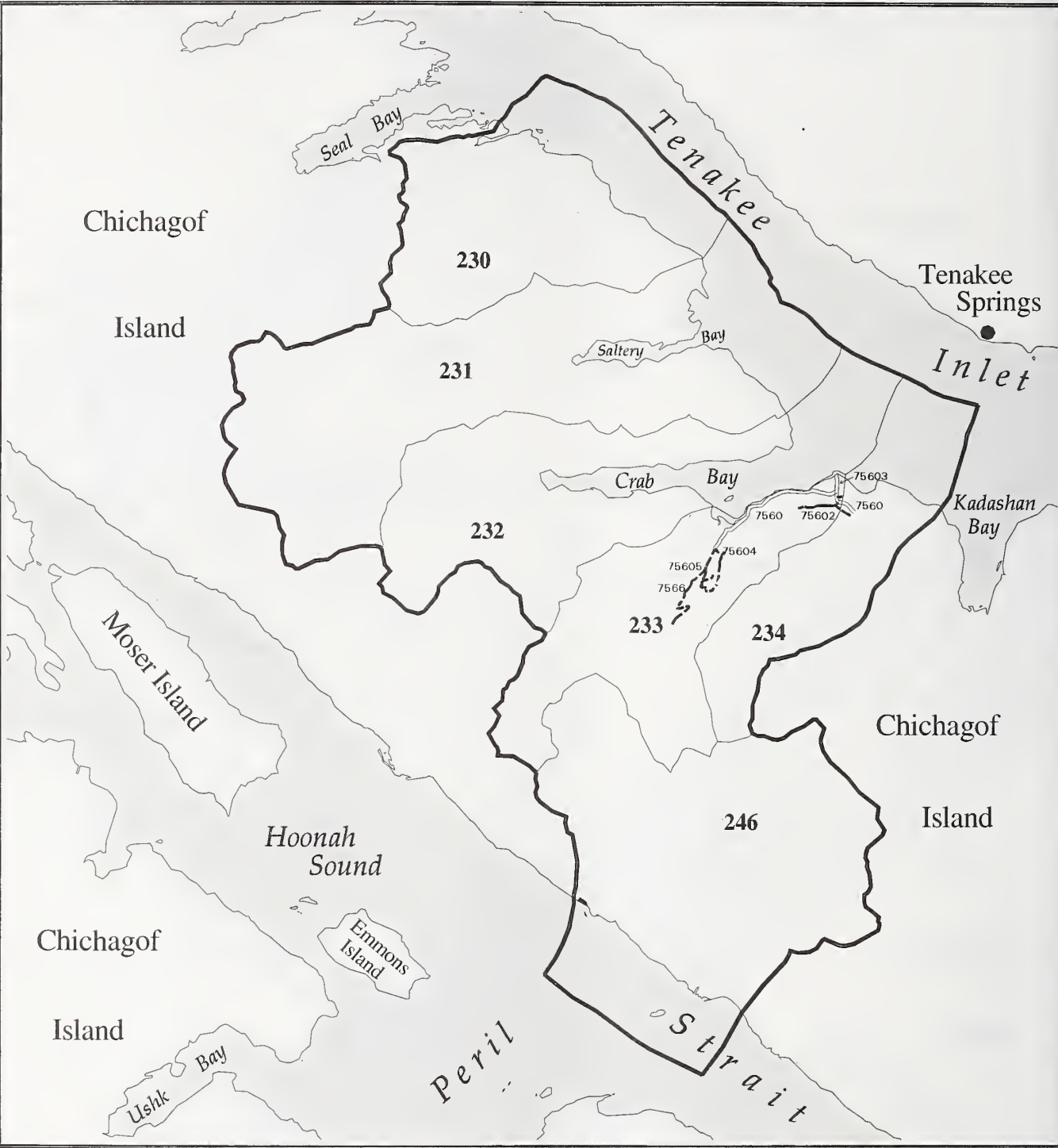
-  Non National Forest Land
-  VCU Boundary
-  Project Boundary

-  Road Maintained for Vehicles
-  Road Closed to Vehicles
- 233** VCU Number

1 0.5 0 1 2 Miles
Scale in Miles



Finger Mountain Road Management Objectives
Alternative H



- Non National Forest Land
- VCU Boundary
- Project Boundary

- Road Maintained for Vehicles
- Road Closed to Vehicles
- VCU Number



ROAD MANAGEMENT OBJECTIVES: ROAD 7560

Project Finger Mountain	System Crab Bay	Begin Terminus SE ¼ Sec 12 R62E T48S	Land Use Designation Timber Production, Modified Landscape
Route No. 7560	Route Name Kadashan Crab	End Terminus SE ¼ Sec 17, R62E, T48S	Map Reference FM Road Maps D, E, F
Begin Milepost 0	Length 6.5	Status Existing	Map Quarter Quad Sitka C-4 NW C-5NE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Collector	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: Possible second entry in 5-10 years depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, F	0.53	5.85	2	2
D	0.53	6.15	2	1
H	0.53	3.53	2	2

Maintenance Narrative: Maintenance Level 2, stormproof in Alts B, F, and H. Bypass ditch relief culverts with waterbars, but leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff. Maintenance Level 1, place in storage in Alt. D. Close road after post sale activities by removing all culverts and waterbarring road.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	B, F, H: inactive D: closed
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Traffic Management Strategies

Alternatives:	B, F, H	Alternative:	D
Encourage:	N/A	Encourage:	N/A
Accept:	Hikers, bicycles	Accept:	Hikers, bicycles
Discourage:	ORVs, motorcycles, high clearance vehicles	Discourage:	N/A
Prohibit:	N/A	Prohibit:	N/A
Eliminate:	Standard passenger cars	Eliminate:	Standard Passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring will discourage ORV use. It is expected that vehicle use after the sale will be minimal.

Site Specific Design Criteria (Road 7560)

Road Location: Existing Road

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Maps D, E, and F. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Site Specific Design Criteria (7560W)

Stream Crossing #: (MP):	75 (0.170)	Stream Class:	1	Process Group:	MM	Substrate:	Small cobble
Bankfull Width:	10 to 15 ft	Channel Bed Width:	5	Upstream Gradient:	6%	Downstream Gradient:	5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class 1	Incision Depth:	
Source Code:	1	Narrative:	Coho and cutthroat found in 2001. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	74 (0.284)	Stream Class:	1	Process Group:	MM	Substrate:	Fine gravel Small cobble
Bankfull Width:	3 to 6 ft	Channel Bed Width:	3	Upstream Gradient:	8%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class 1	Incision Depth:	
Source Code:	1	Narrative:	Dolly Varden char (DV) and cutthroat found in 2001. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	73 (0.294)	Stream Class:	1	Process Group:	MM	Substrate:	Small cobble Organic
Bankfull Width:	15 to 20 ft	Channel Bed Width:	2	Upstream Gradient:	4%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class 1	Incision Depth:	
Source Code:	1	Narrative:	Connects downstream with stream crossing at MP 0.284 A downstream HC channel becoming an MM upstream with decreasing gradient. DV and cutthroat found in 2001. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	72 (0.415)	Stream Class:	1	Process Group:	MM	Substrate:	Course gravel Small cobble
Bankfull Width:	15 to 20 ft	Channel Bed Width:	3	Upstream Gradient:	14%	Downstream Gradient:	12%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class 1	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Dates of survey: 7/97, 7/23/01				

Stream Crossing #: 70 Stream Class: 2 Process Group: MM Substrate: Fine, coarse
(MP): (0.446) Channel Bed Width: 3 Upstream Gradient: 6% Downstream Gradient: 4%
Bankfull Width: Fish Passage Needed: Y BMPs: * Incision Depth:
Structure: Removed Class II
Source 1 Narrative: DV found.
Code: Date of survey: 7/23/01

Stream Crossing #: 71 Stream Class: 1 Process Group: MM Substrate: Fine gravel
(MP): (0.538) Channel Bed Width: 15 Upstream Gradient: 15% Downstream Gradient: 9%
Bankfull Width: Fish Passage Needed: Y BMPs: * Incision Depth:
Structure: Removed Class I
Source 1 Narrative: Dates of survey: 7/97, 7/23/01
Code:

Stream Crossing #: 76 Stream Class: 3 Process Group: AF Substrate: Large, small
(MP): (1.407) Channel Bed Width: 11 Upstream Gradient: 15% Downstream Gradient: 11%
Bankfull Width: Fish Passage Needed: N BMPs: ** Incision Depth:
Structure: Removed Class III
Source 1 Narrative: Dry at this time.
Code: Date of survey: 7/23/01

Stream Crossing #: Stream Class: 1 Process Group: ES Substrate: Organic
(MP): (1.902) Channel Bed Width: 2 Upstream Gradient: 6% Downstream Gradient: 5%
Bankfull Width: Fish Passage Needed: Y BMPs: * Incision Depth:
Structure: Removed Class I
Source 1 Narrative: Very small stream with diminishing habitat upstream. Stream is subterranean across road.
Code: Coho found downstream.
Date of survey: 7/23/01

Stream Crossing #: 95 Stream Class: 1 Process Group: AF Substrate: Large, small
(MP): (1.933) Channel Bed Width: 36 Upstream Gradient: 6% Downstream Gradient: 4%
Bankfull Width: Fish Passage Needed: Y BMPs: * Incision Depth:
Structure: Removed Class I
Source 1 Narrative: Alluvial fan dry at this time. Fan ends near the estuary where fish were found in pools. DV
Code: found in 2001.
Date of survey: 7/23/01

Stream Crossing #: Stream Class: 3 Process Group: HC Substrate: Course gravel
(MP): (2.133) Channel Bed Width: 2 Upstream Gradient: 38% Downstream Gradient: 31%
Bankfull Width: Fish Passage Needed: N BMPs: ** Incision Depth:
Structure: Removed Class III
Source 1 Narrative: Dry channel at this time. Eroded road fill has been carried downstream.
Code: Date of survey: 7/23/01

Appendix C

Stream Crossing #: (MP): Bankfull Width:	(2.143)	Stream Class:	3	Process Group:	HC	Substrate:	Large cobble
Structure:	Removed	Channel Bed Width:	7	Upstream Gradient:	29%	Downstream Gradient:	16%
Source Code:	1	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Narrative:	Dry channel at this time. Eroded road fill has been carried downstream. Date of survey: 7/23/01						
Stream Crossing #: (MP): Bankfull Width:	104 (2.544)	Stream Class:	2	Process Group:	AF	Substrate:	Fine gravel Small cobble
Structure:	Removed	Channel Bed Width:	14	Upstream Gradient:	13%	Downstream Gradient:	11%
Source Code:	1	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Narrative:	Date of survey: 7/23/01						
Stream Crossing #: (MP): Bankfull Width:	107 (2.743)	Stream Class:	1	Process Group:	AF	Substrate:	Cobble, gravel, boulder
Structure:	Removed	Channel Bed Width:	5	Upstream Gradient:	8%	Downstream Gradient:	9%
Source Code:	1	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	10 to 15 ft
Narrative:	AF channel splits into several channels in road area. This is Stream #2 in Unit 1960 in GMK's field notes. Dates of survey: 7/97, 7/23/01						
Stream Crossing #: (MP): Bankfull Width:	(2.752)	Stream Class:	1	Process Group:	PA	Substrate:	Fine gravel
Structure:	Removed	Channel Bed Width:	2	Upstream Gradient:	5%	Downstream Gradient:	4%
Source Code:	1	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Narrative:	Upstream becoming more of an MM channel rather than a PA. DV found. Date of survey: 7/23/01						
Stream Crossing #: (MP): Bankfull Width:	110 (2.763)	Stream Class:	1	Process Group:	MM	Substrate:	Fine gravel Sand
Structure:	Removed	Channel Bed Width:	4	Upstream Gradient:	2%	Downstream Gradient:	2%
Source Code:	1	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Narrative:	This is Stream #1 in Unit 1960 in GMK's field notes. Coho and DV found in 2001. Dates of survey: 7/97, 7/23/01						
Stream Crossing #: (MP): Bankfull Width:	(2.831)	Stream Class:	1	Process Group:	MM	Substrate:	Fine, coarse gravel
Structure:	Removed	Channel Bed Width:	6	Upstream Gradient:	8%	Downstream Gradient:	4%
Source Code:	1	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Narrative:	Coho found downstream. Becomes Class II immediately above road. Date of survey: 7/23/01						

Stream Crossing #: (MP):	111 (2.911)	Stream Class:	1	Process Group:	AF	Substrate:	cobble, boulder
Bankfull Width:	40 to 50 ft	Channel Bed Width:	45	Upstream Gradient:	10%	Downstream Gradient:	13%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Dry channel at low flows. This powerful channel is Stream #6 in Unit 2000 in GMK's field notes. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	121 (3.201)	Stream Class:	1	Process Group:	AF	Substrate:	cobble, boulder
Bankfull Width:	15 to 25 ft	Channel Bed Width:	7	Upstream Gradient:	1%	Downstream Gradient:	1%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Beaver activity/ponds in area near road. This powerful channel is Stream #5 in Unit 1991 in GMK's field notes. Coho found in 2001. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	123 (~3.165)	Stream Class:	1	Process Group:	PA	Substrate:	organic, sand
Bankfull Width:	1 to 3 ft	Channel Bed Width:	3	Upstream Gradient:	0%	Downstream Gradient:	0%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	0 to 1 ft
Source Code:	1	Narrative:	Maintain water flow and fish passage through fen wetland area. Date of survey: 7/97				
Stream Crossing #: (MP):	127 (~3.300)	Stream Class:	1	Process Group:	PA	Substrate:	organic, sand
Bankfull Width:	1 to 3 ft	Channel Bed Width:	3	Upstream Gradient:	0%	Downstream Gradient:	0%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	0 to 1 ft
Source Code:	1	Narrative:	Similar to #123. Maintain water flow and fish passage through fen wetland area. Date of survey: 7/97				
Stream Crossing #: (MP):	(3.413)	Stream Class:	1	Process Group:	MM	Substrate:	Sand Fine gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	5	Upstream Gradient:	3%	Downstream Gradient:	3%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Coho, cutthroat, and DV found in 2001. Dates of survey: 7/97, 7/23/01				
Stream Crossing #: (MP):	130 (3.447)	Stream Class:	1	Process Group:	MM	Substrate:	Course gravel Small cobble
Bankfull Width:	5 to 8 ft	Channel Bed Width:	4	Upstream Gradient:	10%	Downstream Gradient:	7%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Next to fen wetland area channel is similar to PA1. (GK) Close to main channel. Coho, cutthroat, and DV found in 2001. Dates of survey: 7/97, 7/23/01				

Appendix C

Stream Crossing #: (MP): Bankfull Width:	142 (3.478)	Stream Class:	1	Process Group:	HC	Substrate:	Fine, coarse gravel
Structure:	Removed	Channel Bed Width:	3	Upstream Gradient:	7%	Downstream Gradient:	7%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class I		
		Coho and DV found in 2001. Date of survey: 7/23/01					
Stream Crossing #: (MP): Bankfull Width:	(3.502)	Stream Class:	1	Process Group:	HC	Substrate:	Fine gravel
Structure:	Removed	Channel Bed Width:	2	Upstream Gradient:	19%	Downstream Gradient:	11%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class I		
		Coho found in this higher gradient in 2001. Date of survey: 7/23/01					
Stream Crossing #: (MP): Bankfull Width:	(3.530)	Stream Class:	1	Process Group:	PA	Substrate:	Organic
Structure:	Removed	Channel Bed Width:	1	Upstream Gradient:	1%	Downstream Gradient:	10%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class I		
		Coho found in 2001. Date of survey: 7/23/01					
Stream Crossing #: (MP): Bankfull Width:	(3.588)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Structure:	Removed	Channel Bed Width:	1	Upstream Gradient:	25%	Downstream Gradient:	9%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
		DV found in 2001. Upstream habitat ends 50ft above road, gradient increasing. Date of survey: 7/23/01					
Stream Crossing #: (MP): Bankfull Width:	(3.623)	Stream Class:	2	Process Group:	HC	Substrate:	Organic
Structure:	Removed	Channel Bed Width:	1	Upstream Gradient:	19%	Downstream Gradient:	6%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
		Cutthroat and DV found in 2001. Habitat diminishes 25ft above the road. Date of survey: 7/23/01					
Stream Crossing #: (MP): Bankfull Width:	146 (3.688) 3 to 6 ft	Stream Class:	1	Process Group:	MM	Substrate:	Sand Organic
Structure:	Removed	Channel Bed Width:	2	Upstream Gradient:	1%	Downstream Gradient:	1%
Source 1 Code:	Narrative:	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class I		
		Coho found in 2001. Date of survey: 7/23/01					

Stream Crossing #:	147	Stream Class:	1	Process	AF	Substrate:	cobble, boulder
(MP):	(3.799)			Group:			
Bankfull Width:	4 to 8 ft	Channel Bed Width:	6	Upstream Gradient:	4%	Downstream Gradient:	2%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	1 to 3 ft
					Class 1		
Source Code:	1	Narrative:	Two active channels here with good flow and fish present. This powerful channel is Stream #1 in Unit 1992 in GMK's field notes. DV found in 2001.				
			Dates of survey: 7/97, 7/23/01				

Stream Crossing #:		Stream Class:	1	Process	HC	Substrate:	Fine, course gravel
(MP):	(3.846)			Group:			
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	2%	Downstream Gradient:	10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class 1		
Source Code:	1	Narrative:	Coho found in 2001.				
			Date of survey: 7/23/01				

Stream Crossing #:		Stream Class:	1	Process	MM	Substrate:	Organic
(MP):	(3.876)			Group:			
Bankfull Width:		Channel Bed Width:	3	Upstream Gradient:	0%	Downstream Gradient:	6%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class 1		
Source Code:	1	Narrative:	Upstream becoming a PA channel.				
			Date of survey: 7/23/01				

Stream Crossing #:	145	Stream Class:	1	Process	FP	Substrate:	Small cobble
(MP):	(3.918)			Group:			Course gravel
Bankfull Width:		Channel Bed Width:	59	Upstream Gradient:	2%	Downstream Gradient:	2%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	***	Incision Depth:	
					Bridge		
Source Code:	1	Narrative:	Coho, Pink, Chum, DV, and sculpin found in 2001.				
			Date of survey: 7/23/01				

Stream Crossing #:		Stream Class:	1	Process	FP	Substrate:	Fine, course gravel
(MP):	(4.167)			Group:			
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	2%	Downstream Gradient:	5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class 1		
Source Code:	1	Narrative:	Coho and cutthroat found in 2001.				
			Date of survey: 7/23/01				

Stream Crossing #:		Stream Class:	1	Process	FP	Substrate:	Fine gravel
(MP):	(4.269)			Group:			Sand
Bankfull Width:		Channel Bed Width:	30	Upstream Gradient:	2%	Downstream Gradient:	1%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	***	Incision Depth:	
					Bridge		
Source Code:	1	Narrative:	Multiple channels upstream and downstream. Coho and DV found in 2001.				
			Date of survey: 7/23/01				

Site Specific Design Criteria (7560E)

Stream Crossing #: (MP):	between 75 and 81 (0.226)	Stream Class:	1	Process Group:	PA	Substrate:	organic to gravel
Bankfull Width:	3 to 6 ft	Channel Bed Width:	2	Upstream Gradient:	2%	Downstream Gradient:	0%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	This is Stream #4 in Unit 1803 in GMK's field notes. Has associated small ponds below the road. Dates of survey: 9/97, 8/2/01				
Stream Crossing #: (MP):	81 (0.280)	Stream Class:	2	Process Group:	MM	Substrate:	organic to gravel
Bankfull Width:	1 to 2 ft	Channel Bed Width:		Upstream Gradient:	<10%	Downstream Gradient:	<10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	This is Stream #3 in Unit 1804 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #: (MP):	82 (0.378)	Stream Class:	1	Process Group:	MM	Substrate:	gravel, cobble, sand
Bankfull Width:	2 to 4 ft	Channel Bed Width:	2	Upstream Gradient:	<5%	Downstream Gradient:	<5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	0 to 2 ft
Source Code:	1	Narrative:	This is Stream #2 in Unit 1804 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #: (MP):	83 (0.414)	Stream Class:	1	Process Group:	MM	Substrate:	gravel, cobble, sand
Bankfull Width:	3 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	7%	Downstream Gradient:	11%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	0 to 2 ft
Source Code:	1	Narrative:	This is Stream #1 in Unit 1804 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #: (MP):	89 (0.485)	Stream Class:	2	Process Group:	MM	Substrate:	organic
Bankfull Width:	1 to 3 ft	Channel Bed Width:		Upstream Gradient:	<10%	Downstream Gradient:	<10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	0 to 1 ft
Source Code:	1	Narrative:	This is Stream #4 in Unit 1802 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #: (MP):	91 (0.530)	Stream Class:	1/2	Process Group:	MM	Substrate:	fine gravel, sand, organic
Bankfull Width:	2 to 3 ft	Channel Bed Width:	3	Upstream Gradient:	6%	Downstream Gradient:	17%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I/II	Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	This is Stream #3 in Unit 1802 in GMK's field notes. Class I channel changes to Class II at road. Dates of survey: 9/97, 8/2/01				

Stream Crossing #:	94	Stream Class:	2	Process	MM	Substrate:	organic, fine gravel
(MP):	(0.581)			Group:			
Bankfull Width:	3 to 5 ft	Channel Bed Width:	3	Upstream Gradient:	10%	Downstream Gradient:	19%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	0 ft
					Class II		
Source Code:	1	Narrative:	This is Stream #2 in Unit 1802 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:	97	Stream Class:	2	Process	PA	Substrate:	organic
(MP):	(0.634)			Group:			
Bankfull Width:	1 to 3 ft	Channel Bed Width:		Upstream Gradient:	5%	Downstream Gradient:	5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
Source Code:	1	Narrative:	This is Stream #1B in Unit 1802 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:	98	Stream Class:	2	Process	PA	Substrate:	organic
(MP):	(0.657)			Group:			
Bankfull Width:	1 to 3 ft	Channel Bed Width:		Upstream Gradient:	5%	Downstream Gradient:	5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
Source Code:	1	Narrative:	This is Stream #1A in Unit 1802 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:	105	Stream Class:	2	Process	MM	Substrate:	
(MP):	(1.154)			Group:			
Bankfull Width:	2 to 4 ft	Channel Bed Width:		Upstream Gradient:		Downstream Gradient:	
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
Source Code:	1	Narrative:	This is downstream and combination of 2 of the streams in Unit 1801 in GMK's field notes. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:	106	Stream Class:	2	Process	MM	Substrate:	Fine gravel
(MP):	(1.202)			Group:			
Bankfull Width:	1 to 3 ft	Channel Bed Width:	3	Upstream Gradient:	9%	Downstream Gradient:	17%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
Source Code:	1	Narrative:	This is the downstream area of one stream in Unit 1801 in GMK's field notes. Cutthroat found in 2001. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:	108	Stream Class:	2	Process	MM	Substrate:	Fine gravel
(MP):	(1.210)			Group:			
Bankfull Width:	1 to 3 ft	Channel Bed Width:	2	Upstream Gradient:	10%	Downstream Gradient:	10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
					Class II		
Source Code:	1	Narrative:	This is the downstream area of one stream in Unit 1801 in GMK's field notes. DV found in 2001. Dates of survey: 9/97, 8/2/01				
Stream Crossing #:		Stream Class:	1	Process	LC	Substrate:	Bedrock, Cobble
(MP):	(1.571)			Group:			
Bankfull Width:		Channel Bed Width:	41	Upstream Gradient:	1%	Downstream Gradient:	1%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	***	Incision Depth:	
					Bridge		
Source Code:	1	Narrative:	Coho and DV found in 2001. Date of survey: 8/2/01				

Appendix C

Stream Crossing #: (MP):	(1.631)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	2%	Downstream Gradient:	11%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 8/2/01				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits from mile marker 1.0 to terminus to minimize visual impacts to Crab Bay and Tenakee Inlet.

Heritage: An archeologist will be present during reconstruction of approximately 0.33 miles that is within the high probability zone for heritage sites, to insure no unknown heritage sites are found and/or affected. In addition, an existing site will be periodically monitored near this road.

Soils/Water: Need additional fish/hydro review prior to design or any culvert replacement.

ROAD MANAGEMENT OBJECTIVES: ROAD 75602

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75602	Block 1	FM Unit 2030	FM Road Map F
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.31	Existing	Sitka D4 NE
0.31	0.54	Planned	

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: Possible re-entry in 5-10 years, depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D, H	0	0.85	2	1

Maintenance Narrative:

Maintenance Level 1, place in storage. Remove culverts and provide additional waterbars as necessary on steep grades to control runoff. Allow road to grow closed.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	B, D, H
Encourage:	N/A
Accept:	Hikers
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community roads, or to any ferry system terminal. Extensive waterbarring and removal of drainage structures on live streams will eliminate ORV use. It is expected that vehicle use after the sale will be eliminated.

Site-Specific Design Criteria (Road 75602)

Road Location: This road's status is "existing" for the first 0.31 miles. The planned corridor continues to contour for 0.54 miles of standard overlay road construction to access landings in Unit 2030.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints, and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During reconstruction and construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map F. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #:	87	Stream Class:	2	Process Group:	HC	Substrate:	Large rubble to bedrock
(MP):	(0.096)	Channel Bed Width:		Upstream Gradient:		Downstream Gradient:	
Bankfull Width:	8 to 12 ft	Fish Passage Needed:		BMPs:	*	Incision Depth:	
Structure:	Removed	Narrative: Channel information is from uphill of old clearcut and road. Further review is needed.					
Source Code:	2	Date of survey: 6/97					

Stream Crossing #:	84	Stream Class:	2	Process Group:	HC	Substrate:	Small cobble, sand
(MP):	(0.245)	Channel Bed Width:	2	Upstream Gradient:	22%	Downstream Gradient:	27%
Bankfull Width:	3 to 5 ft	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	7 ft
Structure:	Removed	Narrative: Initial channel information is from uphill of old clearcut and road in 1997. RCS data suggests marginal habitat at road. Further review is needed.					
Source Code:	1	Dates of survey: 6/97, 8/1/01					

Stream Crossing #:	85	Stream Class:	2	Process Group:	HC	Substrate:	Large cobble, gravel
(MP):	(0.279)	Channel Bed Width:	6	Upstream Gradient:	15%	Downstream Gradient:	22%
Bankfull Width:	8 to 12 ft	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	30 ft
Structure:	Removed	Narrative: Initial channel information is from uphill of old clearcut and road in 1997. RCS data suggests marginal habitat at road. Further review is needed.					
Source Code:	1	Dates of survey: 6/97, 8/1/01					

Stream Crossing #:	86	Stream Class:	2	Process Group:	HC	Substrate:	Small boulder, gravel
(MP):	(0.307)	Channel Bed Width:	6	Upstream Gradient:	15%	Downstream Gradient:	22%
Bankfull Width:	8 to 15 ft	Fish Passage Needed:	Y	BMPs:	*	Incision Depth:	30+ ft
Structure:	Removed	Narrative: Initial channel information is from uphill of old clearcut and road in 1997. RCS data suggests marginal habitat at road. Further review is needed.					
Source Code:	1	Dates of survey: 6/97, 8/1/01					

Stream Crossing #:	88	Stream Class:	2	Process	HC	Substrate:	Course gravel,
(MP):				Group:			sm. boulders
Bankfull Width:	16 ft	Channel Bed	16	Upstream	10%	Downstream	10%
		Width:		Gradient:		Gradient:	
Structure:		Fish Passage		BMPs:		Incision	10 ft
		Needed:				Depth:	
Source	3	Narrative:	Needs field review. Possibly on proposed section of road. Not reviewed during RCS in				
Code:			2001.				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width for tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits to minimize visual impacts to Crab Bay and Tenakee Inlet.

Soils/Water: Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 75603

Project Finger Mountain	System Crab Bay	Begin Terminus LTF	Land Use Designation Timber Production, Modified Landscape
Route No. 75603	Route Name LTF spur	End Terminus 7560	Map Reference FM Road Map F
Begin Milepost 0	Length 0.36	Status Existing	Map Quarter Quad Sitka D-4NE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Collector	Intermittent	Shotrock	14ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: Possible re-entry in 5-10 years, depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, F, H	0	0.36	2	2
D	0	0.36	2	1

Maintenance Narrative: Maintenance level 2, stormproof. Remove culverts from live streams. Bypass ditch relief culverts with waterbars leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff. Maintenance level 1, place in storage. Remove all culverts. Provide additional waterbars as necessary on steep grades to control runoff.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	B, F, H: inactive D: closed
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Traffic Management Strategies

Alternatives:	B, F, H	Alternative:	D
Encourage:	N/A	Encourage:	N/A
Accept:	Hikers, bicycles	Accept:	Hikers
Discourage:	ORVs, motorcycles, high clearance vehicles	Discourage:	N/A
Prohibit:	N/A	Prohibit:	N/A
Eliminate:	Standard passenger cars	Eliminate:	Standard passenger cars, high clearance vehicles ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring will discourage ORV use. It is expected that post sale vehicle use will be minimal.

Site Specific Design Criteria (Road 75603)

Road Location: Existing road

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit near the LTF site, which is planned as part of the LTF development.

Stream Crossings: Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	(0.193)	Stream Class:	1	Process	PA	Substrate:	Organic
Bankfull Width:		Channel Bed Width:	15	Group: Upstream	0%	Downstream	1%
Structure:	Removed	Fish Passage	Y	Gradient: BMPs:	*	Incision	
Source	1	Needed:		Class I		Depth:	
Code:		Narrative:	Beaver pond upstream. Channel bed width is an estimate. DV found in 2001. Date of survey: 7/20/01				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width for tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits to minimize visual impacts to Crab Bay and Tenakee Inlet; locate fuel dumps to be unobtrusive. Contact Area Landscape Architect for assistance.

Soils/Water: Only one significant stream found, although substantial wetlands are crossed. Need additional fish/hydro review prior to design.

Heritage: An archeologist will be present during reconstruction of approximately 0.50 miles that is within the high probability zone for heritage sites, to insure no unknown heritage sites are found and/or affected.

ROAD MANAGEMENT OBJECTIVES: ROAD 75604

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75604	Block 8	Block 8 landing	FM Road Map E
Begin Milepost	Length	Status	Map Quarter Quad
0	0.18	Existing	Sitka C-4

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: Possible re-entry in 5-10 years, depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
D, F, H	0	0.18	2	1

Maintenance Narrative: Maintenance level 1, place in storage. Remove culverts from live streams, bypass ditch relief culverts with waterbars leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	D, F, H
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring and removal of drainage structures on live streams will eliminate ORV use.

Site Specific Design Criteria (Road 75604)

Road Location: Existing road.

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Map E. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #:		Stream Class:	2	Process Group:	HC	Substrate:	Gravel, large cobble
(MP):	(0.189)			Upstream Gradient:	14%	Downstream Gradient:	10%
Bankfull Width:		Channel Bed Width:	5	BMPs:	*	Incision Depth:	
Structure:	Removed	Fish Passage Needed:	Y		Class II		
Source Code:	1	Narrative:	Date of survey: 7/22/01				

Stream Crossing #:		Stream Class:	2	Process Group:	HC	Substrate:	Gravel, cobbles
(MP):	(0.227)			Upstream Gradient:	20%	Downstream Gradient:	25%
Bankfull Width:		Channel Bed Width:	6	BMPs:	*	Incision Depth:	
Structure:	Removed	Fish Passage Needed:	Y		Class II		
Source Code:	1	Narrative:	Date of survey: 7/22/01				

Stream Crossing #:		Stream Class:	3	Process Group:	AF	Substrate:	Gravel, large cobble
(MP):	(0.246)			Upstream Gradient:	25%	Downstream Gradient:	31%
Bankfull Width:		Channel Bed Width:	9	BMPs:	**	Incision Depth:	
Structure:	Removed	Fish Passage Needed:	N		Class III		
Source Code:	1	Narrative:	Dry channel at time of survey. Date of survey: 7/22/01				

ROAD MANAGEMENT OBJECTIVES: ROAD 75605

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75605	Block 9	End of existing road	FM Road Map E
Begin Milepost	Length	Status	Map Quarter Quad
0	0.34	Existing	Sitka C5 NE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: Possible re-entry in 5-10 years depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D, F, H	0	0.34	2	1

Maintenance Narrative: Maintenance Level 1. Place in storage. Remove culverts. Provide additional waterbars as necessary on steep grades to control runoff. Block and allow to grow closed.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	B, D, F, H
Encourage:	N/A
Accept:	Hikers
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Post sale vehicle use will be eliminated.

Site Specific Design Criteria (Road 75605)

Road Location: Existing road

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 112.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map E. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #:		Stream Class:	2	Process Group:	HC	Substrate:	Fine, coarse gravel
(MP):	(0.034)			Upstream Gradient:	6%	Downstream Gradient:	15%
Bankfull Width:	3 to 5 ft	Channel Bed Width:	4	BMPs:	*	Incision depth:	0 to 1 ft
Structure:	Removed	Fish Passage Needed:	Y		Class II		
Source Code:	1	Narrative:	Cutthroat found in 2001. Dates of survey: 7/97, 7/23/01				

Stream Crossing #:		Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
(MP):	(0.103)			Upstream Gradient:	16%	Downstream Gradient:	18%
Bankfull Width:		Channel Bed Width:	4	BMPs:	*	Incision depth:	
Structure:	Removed	Fish Passage Needed:	Y		Class II		
Source Code:	1	Narrative:	3 small channels upstream join before reaching road. Cutthroat found in 2001. Date of survey: 7/23/01				

Stream Crossing #:	132	Stream Class:	2	Process Group:	HC	Substrate:	Large cobble, Boulders
(MP):	(0.149)			Upstream Gradient:	38%	Downstream Gradient:	29%
Bankfull Width:		Channel Bed Width:	4	BMPs:	*	Incision depth:	
Structure:	Removed	Fish Passage Needed:	N		Class II		
Source Code:	1	Narrative:	5ft temporary barrier downstream from road; Cutthroat caught below it. Upstream developing a gradient barrier = Class III. No passage required. Dates of survey: 7/97, 7/23/01				

Additional Resource Information

Soils/Water: Proposed temporary roads extending off Road 75605 will need additional fish/hydro review prior to determining crossing drainage structures.

ROAD MANAGEMENT OBJECTIVES: ROAD 75607

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75607	Crab View	FM Unit 1977	FM Road Map D
Begin Milepost	Length	Status	Map Quarter Quad
0	1.41	Planned	Sitka C-5 NE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D	0	1.41	2	1

Maintenance Narrative: Maintenance Level 1. Place in storage. Remove all culverts. Provide additional waterbars as necessary on steep grades to control runoff. Block and allow to grow closed.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Closed
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Traffic Management Strategies

Alternatives:	B, D
Encourage:	N/A
Accept:	Hikers
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, High clearance vehicles ORVs, motorcycles

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Post sale vehicle use will be eliminated.

Site Specific Design Criteria (Road 75607)

Road Location: The lower portion of the road corridor climbs up the hillside to access the only flat switchback location. The upper portion climbs up to access the landing in Unit 1977. It crosses one large V-notch prior to entering Unit 1977. Road construction will include some partial cut sections with side cast.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints, and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map D.

Stream Crossing#	118	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:	13ft	Gradient:	28%	Substrate:	large cobble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Upstream area of same stream at Crossing #134 which has detailed information				

Stream Crossing#	119	Stream Class:	4	Channel Type:	HC0	Incision Depth:	13 ft
Bankfull Width:	3 ft	Channel Bed Width:		Gradient:	25%	Substrate:	cobble, bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Upstream area of same stream at Crossing #136 which has detailed information				

Stream Crossing#	122	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:		Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Upstream area of same stream at Crossing #139 which has detailed information				

Stream Crossing#	125	Stream Class:	3	Channel Type:	HC6	Incision Depth:	75 ft
Bankfull Width:	20 ft	Channel Bed Width:		Gradient:	35%	Substrate:	bedrock, boulders, cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Upstream area of same stream at Crossing #140, which has detailed information.				

Appendix C

Stream Crossing#	128	Stream Class:	3	Channel Type:	HC6	Incision Depth:	75 ft
Bankfull Width:	20 ft	Channel Bed Width:		Gradient:	35%	Substrate:	bedrock, boulders, cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Upstream area of same stream at Crossing #141 which has detailed information				

Stream Crossing#	131	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:		Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	134	Stream Class:	2	Channel Type:	HC6	Incision Depth:	4 to 6 ft
Bankfull Width:	10 to 20 ft	Channel Bed Width:		Gradient:	15 to 20%	Substrate:	cobble, boulder, gravel
Structure:	bridge	Passage:	Y	Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #3 in Unit 1971 in GMK's field notes. Old P-line #2+"40". Intermittent stream goes dry in areas during lower flows. It is Class II about 400 ft upstream of the road. Becomes AF1 just below road.				

Stream Crossing#	136	Stream Class:	2	Channel Type:	HC0	Incision Depth:	1 to 2 ft
Bankfull Width:	3 to 5 ft	Channel Bed Width:		Gradient:	25%	Substrate:	cobble, gravel, boulder
Structure:		Passage:	Y	Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #2 in Unit 1971 in GMK's field notes. Old P-line #6+88. It is Class II about 50 ft upstream of the road. V-notch is 3 to 6 ft incised.				

Stream Crossing#	137	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:		Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	138	Stream Class:	4	Channel Type:	HC0	Incision Depth:	1 to 2 ft
Bankfull Width:	3 to 5 ft	Channel Bed Width:		Gradient:	30%	Substrate:	cobble, gravel, boulder
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #1 in Unit 1971 in GMK's field notes. Old P-line #10+12. It is Class II about 150 ft downstream of the road. V-notch is 8 to 15 ft incised.				

Stream Crossing#	139	Stream Class:	2	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	7 to 12 ft	Channel Bed Width:		Gradient:	15 to 25%	Substrate:	cobble, boulder, gravel
Structure:		Passage:	Y	Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #2 in Unit 1972 in GMK's field notes. Old P-line #13+75. It is Class II (fish observed) about 300ft upstream of the road. V-notch is 10 to 20 ft incised.				

Stream Crossing#	140	Stream Class:	2	Channel Type:	HC6	Incision Depth:	2 to 5 ft active
Bankfull Width:	4 to 7 ft	Channel Bed Width:	ft	Gradient:	15 to 25%	Substrate:	cobble, boulder, gravel
Structure:		Passage:	Y	Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #1 in Unit 1972 in GMK's field notes. Old P-line #21+"00". It is Class II about 200 ft upstream of the road. V-notch is 20 to 50 ft incised. Fish (cutthroat) observed in pools until gradient exceeded 30%.				

Stream Crossing#	141	Stream Class:	3	Channel Type:	HC6	Incision Depth:	2 to 5 ft active
Bankfull Width:	4 to 7 ft	Channel Bed Width:		Gradient:	25 to 35%	Substrate:	cobble, boulder, gravel
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	1	Narrative:	This is Stream #0 in Unit 1972 in GMK's field notes. Old P-line #23+"97". It is Class II below road, and Class III above road. V-notch is 50 to 100 ft incised. Fish (cutthroat) observed in pools until gradient exceeded 30%.				

Stream Crossing#	143	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:		Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	144	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:		Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Additional Resource Information

Soils/Water: Proposed roads will need additional fish/hydro review prior to determining crossing drainage structures. Additional detailed notes on stream crossing sites with Source Code 1 are available in the Fish/Hydro field notes for units 1971 and 1972.

ROAD MANAGEMENT OBJECTIVES: ROAD 7561

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	RD 7568	Timber Production
Route No.	Route Name	End Terminus	Map Reference
7561	EMMA	MP 2.71	FM Road Map C
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.59	Existing	Sitka D5
0.59	2.12	Planned	

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities: possible second entry in 5-10 years, depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B	0	0.59	2	2
D	0	2.71	2	2

Maintenance Narrative: Maintenance Level 2, stormproof. Road will remain open in both action alternatives and will be crowned and drivable dips will be placed so water will run off road surface. Drainage structures will be maintained.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest Ownership **AFRPR Status:** Inactive

Traffic Management Strategies

Alternatives:	B, D
Encourage:	N/A
Accept:	Hikers, bicycles, high clearance vehicles
Discourage:	ORVs, motorcycles
Prohibit:	N/A
Eliminate:	Standard passenger cars

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. It is expected that post sale vehicle use will be minimal.

Site Specific Design Criteria (Road 7561)

Road Location: The first 0.59 mile of this road exists. The last 2.12 miles are planned for construction under Alternative D. The road corridor was located to be a screen from the Inlet.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During reconstruction and construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from an existing rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Map C. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	(0.138)	Stream Class:	2	Process Group:	HC	Substrate:	Sand, coarse gravel
Bankfull Width:		Channel Bed Width:	<1	Upstream Gradient:	17%	Downstream Gradient:	17%
Existing Structure:	18" cmp	Fish Passage Needed:	N	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Small, low energy stream. Marginal habitat upstream. No passage needed. Date of Survey: 7/18/01				

Stream Crossing #: (MP):	13 (0.300) + (0.313)	Stream Class:	1	Process Group:	FP	Substrate:	Large and small cobble
Bankfull Width:		Channel Bed Width:	71	Upstream Gradient:	1%	Downstream Gradient:	1%
Existing Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision depth:	
Source Code:	1	Narrative:	2 log stringer bridges over river: MP 0.300 = deck failing, MP 0.313 = browlog failing. Channel bed width is combined channel widths. Coho, DV, and sculpin caught in 2001. Date of Survey: 7/18/01				

Stream Crossing #: (MP):	(0.472)	Stream Class:	3	Process Group:	AF	Substrate:	Large cobble, fine gravel
Bankfull Width:		Channel Bed Width:	8	Upstream Gradient:	18%	Downstream Gradient:	27%
Existing Structure:	Structure removed	Fish Passage Needed:	N	BMPs:	** Class III	Incision depth:	
Source Code:	1	Narrative:	Alluvial fan through a clearcut just below a landslide. Date of Survey: 7/18/01				

Stream Crossing #: (MP):	20	Stream Class:	1	Process Group:	MM	Substrate:	Gravel to small boulder
Bankfull Width:	46 ft	Channel Bed Width:	41	Upstream Gradient:	3%	Downstream Gradient:	3%
Existing Structure:		Fish Passage Needed:		BMPs:		Incision depth:	7 ft
Source Code:	3	Narrative:	This stream crosses the proposed section of the road and has not been surveyed in the field. Additional fish/hydro review is needed.				

Appendix C

Stream Crossing #: (MP):	27	Stream Class:	3	Process Group:	HC	Substrate:	Bedrock, boulders, & cobble
Bankfull Width:	20 ft	Channel Bed Width:	20	Upstream Gradient:	27%	Downstream Gradient:	27%
Existing Structure:		Fish Passage Needed:		BMPs:		Incision depth:	
Source Code:	3	Narrative:	This stream crosses the proposed section of the road and has not been surveyed in the field. Additional fish/hydro review is needed.				

Stream Crossing #: (MP):	28	Stream Class:	3	Process Group:	HC	Substrate:	Bedrock, boulders, & cobble
Bankfull Width:	20 ft	Channel Bed Width:	20	Upstream Gradient:	27%	Downstream Gradient:	27%
Existing Structure:		Fish Passage Needed:		BMPs:		Incision depth:	
Source Code:	3	Narrative:	This stream crosses the proposed section of the road and has not been surveyed in the field. Additional fish/hydro review is needed.				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits to minimize visual impacts to Tenakee Inlet.

Soils/Water: Additional detailed notes on stream crossing sites for the associated temporary road to and within proposed Unit 1620 are available in the Fish/Hydro field notes for that unit.
Most of this road needs additional fish/hydro review prior to design.

Heritage: An archeologist will be present during construction of approximately 0.67 miles that is within the high probability zone for heritage sites, to insure no unknown heritage sites are found and/or affected.

ROAD MANAGEMENT OBJECTIVES: ROAD 75619

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	7561	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75619	Emma 9	Unit 1670	FM Road Map B, C
Begin Milepost	Length	Status	Map Quarter Quad
0	0.07	Existing	Sitka D-5
0.07	0.90	Planned	

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use:

Silvicultural activities. Possible re-entry in 5-10 years, depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B	0	0.97	2	2

Maintenance Narrative: Maintenance Level 2, stormproof. Leave culverts in place for future use. Roadway will be crowned and drivable waterbars will be placed so water will run off (BMP 14-8, 9).

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Inactive

Traffic Management Strategies

Alternatives:	B
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	ORVs, motorcycles, high clearance vehicles
Prohibit:	N/A
Eliminate:	Standard passenger cars

Travel Management Narrative:

This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring will discourage ORV use. It is expected that post sale vehicle use will be minimal.

Site Specific Design Criteria (Road 75619)

Road Location: The first 0.07 mile of this road exists. The next 0.90 miles of road climbs at grades up to 15% and crosses over a Class II stream prior to ending in Unit 1670. The road was located to access the only functional bridge location over the Class II stream.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During reconstruction and construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Maps B and C. Streams are listed in order of station marker where crossing numbers are unavailable.

Site Specific Design Criteria

Stream Crossing#: Station Marker:	44 + 16	Stream Class:	2	Channel Type:	HC5	Incision Depth: Width:	2.3 17.0
Bankfull Width: Depth:	11.3 1.4	Channel Bed Width:	2.2	Gradient:	24%	Substrate:	Coarse grvl/sand
Structure:	24x44cmp	Passage: Method:	Y	Timing Dates:		BMPs:	* Class II
Source Code:	1	Narrative:	Crossing located 200' upstream of mainstem Class II stream. Date of survey: 10/13/01				

Stream Crossing#: Station Marker:	29 46 + 05 (MP 0.87)	Stream Class:	2	Channel Type:	HC2	Incision Depth: Width:	5.9 68.5
Bankfull Width: Depth:	40.5 4.9	Channel Bed Width:	15.1	Gradient:	9%	Substrate:	Bldr/lg cobble
Structure:	BRIDGE	Passage: Method:	Y	Timing Dates:		BMPs:	*** Bridge
Source Code:	1	Narrative:	Fish observed at crossing location. Hydro site survey for bridge required. Date of survey: 10/13/01				

Additional Resource Information

Soils/Water: This road needs additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 7565

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
7565	Fog Creek	Sec 13	FM Road Map F
Begin Milepost	Length	Status	Map Quarter Quad
0.00	2.51	Existing	Sitka C-4 NW

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, F	0	1.57	2	2
B	1.57	2.51	2	1
D	0	1.57	2	1

Maintenance Narrative: The first 1.57 miles will be maintenance Level 2, stormproof in Alternatives B and F. In these alternatives additional waterbars will be installed and the road crowned so water drains off the surface and the drainage structures maintained. In Alternative B, the remaining 0.94 miles of road will be put in storage and all culverts removed and waterbars installed to control runoff. In Alternative D, the first 1.57 miles will be put in storage and all drainage structures removed and waterbars added to control runoff.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Inactive – B & F Closed – Alt. D
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Traffic Management Strategies

Alternatives:	B, F - (0 - 1.57 mi.)	Alternatives:	D
Encourage:	N/A	Encourage:	N/A
Accept:	Hikers, bicycles	Accept:	Hikers
Discourage:	ORVs, motorcycles, high clearance vehicles	Discourage:	N/A
Prohibit:	N/A	Prohibit:	N/A
Eliminate:	Standard passenger cars	Eliminate:	Standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring will discourage ORV use. It is expected that post sale vehicle use will be minimal.

Site Specific Design Criteria (Road 7565)

Road Location: Existing

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map F. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	112 (0.019)	Stream Class:	2	Process Group:	MM	Substrate:	organic, sand
Bankfull Width:	2 to 4 ft	Channel Bed Width:	2	Upstream Gradient:	9%	Downstream Gradient:	9%
Structure:	Removed 36" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	This is Stream #3 in Unit 1800 in GMK's field notes. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	113 (0.059)	Stream Class:	2	Process Group:	MM	Substrate:	Fine gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	4	Upstream Gradient:	9%	Downstream Gradient:	31%
Structure:	Removed 24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	RCS found potential downstream gradient barrier. Further assessment needed. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	114 (0.095)	Stream Class:	2	Process Group:	MM	Substrate:	Gravels
Bankfull Width:	2 to 4 ft	Channel Bed Width:	2	Upstream Gradient:	9%	Downstream Gradient:	25%
Structure:	Removed 36" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	This is Stream #2 in Unit 1800 in GMK's field notes. RCS found potential downstream gradient barrier. Further assessment needed. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	116 (0.122)	Stream Class:	2	Process Group:	MM	Substrate:	organic, sand
Bankfull Width:	1 to 3 ft	Channel Bed Width:	2	Upstream Gradient:	8%	Downstream Gradient:	13%
Structure:	Removed 24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	117 (0.145)	Stream Class:	1	Process Group:	MM	Substrate:	cobble, gravel, boulder
Bankfull Width:	6 to 10 ft	Channel Bed Width:	6	Upstream Gradient:	<5%	Downstream Gradient:	<5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision depth:	1 to 3 ft, active
Source Code:	1	Narrative:	This is Stream #1 in Unit 1800 in GMK's field notes. Old P-line #7+70. In 4 to 10 ft incised V-notch. RCS found higher gradients at road crossing: 10-12%. Cutthroat found in 2001. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	124 (0.288)	Stream Class:	1	Process Group:	MM	Substrate:	gravel, cobble
Bankfull Width:	6 to 10 ft	Channel Bed Width:	6	Upstream Gradient:	5%	Downstream Gradient:	5%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision depth:	0.6 to 2 ft
Source Code:	1	Narrative:	This is Stream #A-1 south of Unit 1800 in GMK's field notes. Cutthroat and DV found in 2001. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	129 (0.600)	Stream Class:	1	Process Group:	AF	Substrate:	Boulders, large cobble, gravel
Bankfull Width:	30 to 45 ft	Channel Bed Width:	30	Upstream Gradient:	10%	Downstream Gradient:	9%
Structure:	Removed bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision depth:	3 to 6 ft
Source Code:	1	Narrative:	Dry, high power AF1 channel is Stream #1 in Unit 1860 in GMK's field notes. P-line #128+84. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	(0.673)	Stream Class:	2	Process Group:	AF	Substrate:	Course, fine gravel
Bankfull Width:		Channel Bed Width:	8	Upstream Gradient:	7%	Downstream Gradient:	14%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Dry at time of survey. Date of survey: 8/3/01				

Stream Crossing #: (MP):	133 (0.724)	Stream Class:	2	Process Group:	MM	Substrate:	Organic, sand, gravel
Bankfull Width:	1 to 2 ft	Channel Bed Width:	2	Upstream Gradient:	8%	Downstream Gradient:	9%
Structure:	Removed 24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	1 ft
Source Code:	1	Narrative:	This is Stream #1 in Unit 1812 in GMK's field notes. RCS found limited habitat upstream of road and cutthroat downstream in 2001. Dates of survey: 8/10/97, 8/3/01				

Stream Crossing #: (MP):	135 (0.739)	Stream Class:	2	Process Group:	MM	Substrate:	sand to gravel
Bankfull Width:	3 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	12%	Downstream Gradient:	21%
Structure:	Removed 24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	1 ft
Source Code:	1	Narrative:	This is Stream #2 in Unit 1812 in GMK's field notes. Dates of survey: 8/10/97, 8/4/01				

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Stream Crossing #: (MP):	148 (0.844)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel Large cobble
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	28%	Downstream Gradient:	14%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Cutthroat caught downstream but habitat diminishes upstream due to gradient. Class IV upstream; fish passage not required. Date of survey: 8/19/01				

Stream Crossing #: (MP):	(0.923)	Stream Class:	2	Process Group:	HC	Substrate:	Sand
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	18%	Downstream Gradient:	16%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Road fill has eroded and is creating a 38% gradient barrier downstream. Cutthroat and DV found in 2001. Date of survey: 8/4/01				

Stream Crossing #: (MP):	(1.020)	Stream Class:	2	Process Group:	HC	Substrate:	Course gravel
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	14%	Downstream Gradient:	15%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Road fill has eroded creating a 25% gradient barrier downstream. Cutthroat found in 2001. Date of survey: 8/4/01				

Stream Crossing #: (MP):	(1.075)	Stream Class:	2	Process Group:	HC	Substrate:	Sand Organic
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	11%	Downstream Gradient:	13%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 8/4/01				

Stream Crossing #: (MP):	151 (1.193)	Stream Class:	3	Process Group:	AF	Substrate:	Gravels
Bankfull Width:		Channel Bed Width:	3	Upstream Gradient:	21%	Downstream Gradient:	27%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	** Class III	Incision depth:	
Source Code:	1	Narrative:	Upstream dry, unstable. Date of survey: 8/5/01				

Stream Crossing #: (MP):	(1.306)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel large cobble
Bankfull Width:		Channel Bed Width:	3	Upstream Gradient:	18%	Downstream Gradient:	12%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 8/5/01				

Stream Crossing #: (MP):	(1.338)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel small cobble
Bankfull Width:		Channel Bed Width:	1	Upstream Gradient:	12%	Downstream Gradient:	11%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Low flows at time of survey, marginal habitat. Date of survey: 8/5/01				

Stream Crossing #: (MP):	155 (1.450)	Stream Class:	2	Process Group:	MM	Substrate:	Gravel to bedrock
Bankfull Width:	3 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	11%	Downstream Gradient:	16%
Structure:	Removed 36" or 48" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	1 ft
Source Code:	1	Narrative:	P-line #81-00 in GMK's field notes. Cutthroat found in 2001. Dates of survey: 8/9/97, 8/5/01				

Stream Crossing #: (MP):	157 (1.502)	Stream Class:	1	Process Group:	MM	Substrate:	Gravel, small cobble to bedrock
Bankfull Width:	3 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	3%	Downstream Gradient:	3%
Structure:	Removed 36" or 48" cmp	Fish Passage Needed:	Y	BMPs:	* Class I	Incision depth:	1 ft
Source Code:	1	Narrative:	P-line #84-30 in GMK's field notes. RCS found higher gradients at road crossing: 9-16%. Cutthroat found in 2001. Dates of survey: 8/9/97, 8/5/01				

Stream Crossing #: (MP):	158 (1.563)	Stream Class:	2	Process Group:	MM	Substrate:	Organic
Bankfull Width:	3 to 4 ft	Channel Bed Width:	2	Upstream Gradient:	16%	Downstream Gradient:	17%
Structure:	Removed 36" or 48" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	1 ft
Source Code:	1	Narrative:	P-line #85-50 in GMK's field notes. Cutthroat found in 2001. Dates of survey: 8/9/97, 8/5/01				

Stream Crossing #: (MP):	(1.587)	Stream Class:	2	Process Group:	MM	Substrate:	Course gravel Sand
Bankfull Width:	3 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	7%	Downstream Gradient:	7%
Structure:	Removed 36" or 48" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	1 ft
Source Code:	1	Narrative:	P-line #86+90 in GMK's field notes. Cutthroat found in 2001. Dates of survey: 8/9/97, 8/6/01				

Stream Crossing #: (MP):	(1.608)	Stream Class:	2	Process Group:	HC	Substrate:	Sand Organic
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	7%	Downstream Gradient:	9%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 8/6/01				

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Stream Crossing #: (MP):	161 (1.648)	Stream Class:	1	Process Group:	MM	Substrate:	Sand, cobble gravel
Bankfull Width:	10 to 15 ft	Channel Bed Width:	10	Upstream Gradient:	4%	Downstream Gradient:	7%
Structure:	Removed Lg bottomless arch	Fish Passage Needed:	Y	BMPs:	* Class I	Incision depth:	2 ft
Source Code:	1	Narrative:	P-line #89+25 in GMK's field notes. Coho, cutthroat, and DV found in 2001. Dates of survey: 8/9/97, 8/6/01				

Stream Crossing #: (MP):	163 (1.781)	Stream Class:	1	Process Group:	FP	Substrate:	Small cobble Boulders
Bankfull Width:		Channel Bed Width:	52	Upstream Gradient:	2%	Downstream Gradient:	2%
Structure:	Removed Bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision depth:	
Source Code:	1	Narrative:	Main channel; Coho and DV found in 2001. Date of survey: 8/6/01				

Stream Crossing #: (MP):	164 (1.873)	Stream Class:	2	Process Group:	HC	Substrate:	Large cobble Course gravel
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	15%	Downstream Gradient:	7%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 8/6/01				

Stream Crossing #: (MP):	(1.899)	Stream Class:	2	Process Group:	MM	Substrate:	Small cobble Fine gravel
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	12%	Downstream Gradient:	6%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	DV found in 2001. Upstream becoming an HC channel. Date of survey: 8/6/01				

Stream Crossing #: (MP):	165 (1.935)	Stream Class:	2	Process Group:	HC	Substrate:	Course gravel
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	19%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 8/6/01				

Stream Crossing #: (MP):	(2.010)	Stream Class:	2	Process Group:	HC	Substrate:	Large cobble
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	16%	Downstream Gradient:	15%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	DV and cutthroat found in 2001. Date of survey: 8/6/01				

Stream Crossing #: (MP):	(2.061)	Stream Class:	2	Process Group:	HC	Substrate:	Small cobble fine gravel
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	33%	Downstream Gradient:	14%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Road fill has eroded resulting in a 37% gradient barrier downstream. However, the natural gradient upstream is increasing (diminished habitat) resulting in no need for fish passage. Cutthroat found downstream. Date of survey: 8/6/01				

Stream Crossing #: (MP):	160 (2.426)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	20%	Downstream Gradient:	14%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Date of survey: 8/6/01				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits from mile marker 1.33 to intersection with 7560 to minimize visual impacts to Crab Bay and Tenakee Inlet.

Soils/Water: Additional detailed notes on stream crossing sites for the associated temporary roads that access proposed units 1810, 1813, 1820, 1850, 1852, and 1853 are available in the Fish/Hydro field notes for those units. Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 75651

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7565	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75651	Block 16	Milepost 0.93	FM Road Map F
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.93	Existing	Sitka C-4 NW

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D, F	0	0.93	2	1

Maintenance Narrative: Maintenance Level 1, put in storage. Remove all culverts and bridges. Provide additional waterbars as necessary on steep grades to control runoff. Block road and allow to grow closed.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Closed
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Traffic Management Strategies

Alternatives:	B, D, F
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Motor vehicle use post sale will be eliminated.

Site Specific Design Criteria (Road 75651)

Road Location: Existing

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement.

Stream Crossings: Stream crossing numbers correspond to Road Map F. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	120 (0.105)	Stream Class:	3	Process Group:	HC	Substrate:	large rubble to bedrock
Bankfull Width:	13 ft	Channel Bed Width:	13	Upstream Gradient:	28%	Downstream Gradient:	28%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	15 ft
Source Code:	3	Narrative:	Need additional fish/hydro field review.				

Stream Crossing #: (MP):	109 (0.496)	Stream Class:	3	Process Group:	HC	Substrate:	large rubble to bedrock
Bankfull Width:	13 ft	Channel Bed Width:	13	Upstream Gradient:	28%	Downstream Gradient:	28%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	15 ft
Source Code:	3	Narrative:	Need additional fish/hydro field review.				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen road bed; locate and design rockpits to minimize visual impacts to Crab Bay and Tenakee Inlet.

Soils/Water: This road needs additional fish/hydro field review prior to design. Additional detailed notes on stream crossing sites for the associated temporary road that accesses proposed Unit 2040 are available in the Fish/Hydro field notes for that unit.

ROAD MANAGEMENT OBJECTIVES: ROAD 75652

Project Finger Mountain	System Crab Bay	Begin Terminus 7565	Land Use Designation Timber Production
Route No. 75652	Route Name Upper Fog spur	End Terminus Landing	Map Reference FM Road Map F
Begin Milepost 0.00	Length 0.34	Status Existing	Map Quarter Quad Sitka C-4

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B	0	0.34	2	1

Maintenance Narrative: Maintenance Level 1, put in storage. Remove culverts from live streams. Bypass ditch relief culverts with waterbars leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff. Allow road to grow closed.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	B
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring and removal of drainage structures on live streams will eliminate road use.

Site Specific Design Criteria (Road 75642)

Road Location: Existing.

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map F. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	166 (0.055)	Stream Class:	2	Process Group:	HC	Substrate:	Course gravel Small cobble
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	19%	Downstream Gradient:	20%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 8/6/01				

Stream Crossing #: (MP):	169 (0.233)	Stream Class:	4	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	31%	Downstream Gradient:	23%
Structure:	Removed	Fish Passage Needed:	N	BMPs:		Incision depth:	
Source Code:	1	Narrative:	Gradient barriers; stream buried under slash. No fish habitat at road location. Date of survey: 8/6/01				

Additional Resource Information

Soils/Water: Additional detailed notes on stream crossing sites for the associated temporary road that accesses proposed Unit 1830 are available in the Fish/Hydro field notes for that unit. Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 75653

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay/Fog Creek	7565	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75653	Fog 3	Landing	FM Road Map F
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.13	Existing	Sitka C-4 NW

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years, depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D, F	0	0.13	2	1

Maintenance Narrative: Maintenance Level 1, storage: Remove culverts from live streams. Bypass ditch relief culverts with waterbars leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Closed
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Traffic Management Strategies

Alternatives:	B, D, F
Encourage:	N/A
Accept:	hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring and removal of drainage structures on live streams will eliminate road use.

Site Specific Design Criteria (Road 75653)

Road Location: Existing Road.

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):		Stream Class:	3	Process Group:	AF	Substrate:	Large cobble Fine gravel
Bankfull Width:		Channel Bed Width:	8	Upstream Gradient:	13%	Downstream Gradient:	26%
Structure:		Fish Passage Needed:	N	BMPs:	** Class III	Incision depth:	
Source Code:	1	Narrative:	Debris flow down road. Date of survey: 8/5/01				

Additional Resource Information

Soils/Water: Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 7566

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Crab Bay	7560	Timber Production
Route No.	Route Name	End Terminus	Map Reference
7566	Broad Finger head	Unit 1983	FM Road Map D
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.63	Existing	Sitka C-5 NE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternative s	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B,D,F, H	0	0.57	2	1
B,D,F	0.57	0.63	1	1

Maintenance Narrative: Maintenance Level 1, put in storage. Remove all culverts and bridges. Provide additional waterbars as necessary on steep grades to control runoff. Allow road to grow closed. The last 0.06 miles of road is not used and will remain closed in all Alternatives.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	B, D, F, H
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	ORVs, standard passenger cars, high clearance vehicles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Post sale vehicle use will be eliminated.

Site Specific Design Criteria (Road 7566)

Road Location: The first 0.57 mile of the road exists. The road corridor runs through commercial and non-commercial forest.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6).

Stream Crossings: Stream crossing numbers correspond to Road Map D. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	149 (0.095) + (0.102)	Stream Class:	1	Process Group:	AF	Substrate:	Boulders Large cobble
Bankfull Width:	10 to 15 ft	Channel Bed Width:	4 + 10	Upstream Gradient:	10%	Downstream Gradient:	10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	2 active channels here with good flow and fish present. This powerful channel is Stream #1 in Unit 1992 in GMK's field notes. Dates of survey: 6/19/97, 8/18/01				

Stream Crossing #: (MP):	150 (0.218)	Stream Class:	3	Process Group:	HC	Substrate:	gravel, cobble, boulder
Bankfull Width:	8 to 12 ft	Channel Bed Width:	12	Upstream Gradient:	9%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	*** Bridge	Incision Depth:	3 to 6 ft
Source Code:	1	Narrative:	Old log stringer bridge Channel is dry at lower flows. This powerful channel is Stream #2 in Unit 1983 in GMK's field notes. Dates of survey: 6/19/97, 8/18/01				

Stream Crossing #: (MP):	(0.300)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	2	Upstream Gradient:	18%	Downstream Gradient:	10%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 8/18/01				

Stream Crossing #: (MP):	152 (0.334)	Stream Class:	2	Process Group:	MM	Substrate:	Sand Organic
Bankfull Width:	1 to 3 ft	Channel Bed Width:	2	Upstream Gradient:	8%	Downstream Gradient:	9%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Habitat diminishes upstream = Class IV. Cutthroat found in 2001. Dates of survey: 6/19/97, 8/18/01				

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Stream Crossing #: (MP):	153 (0.350)	Stream Class:	2	Process Group:	MM	Substrate:	Boulder, cobble, gravel
Bankfull Width:	3 to 6 ft	Channel Bed Width:	3	Upstream Gradient:	11%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	This channel is Stream #2 in Unit 1980 in GMK's field notes. Cutthroat found in 2001. Dates of survey: 6/19/97, 8/18/01				

Stream Crossing #: (MP):	(0.421)	Stream Class:	1	Process Group:	HC	Substrate:	Small cobble Fine gravel
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	9%	Downstream Gradient:	8%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Coho and DV found in 2001. Date of survey: 8/18/01				

Stream Crossing #: (MP):	154 (0.518)	Stream Class:	2	Process Group:	MM	Substrate:	Boulder, cobble, gravel
Bankfull Width:	3 to 6 ft	Channel Bed Width:	4	Upstream Gradient:	6%	Downstream Gradient:	9%
Structure:	Removed	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	This channel is Stream #1 in Unit 1980 in GMK's field notes. There is a much larger stream just SW of this one that goes through old clearcut. Dates of survey: 6/19/97, 8/18/01				

Stream Crossing #: (MP):	(0.569)	Stream Class:	3	Process Group:	AF	Substrate:	Large, small cobble
Bankfull Width:		Channel Bed Width:	130	Upstream Gradient:	11%	Downstream Gradient:	15%
Structure:	Removed	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	Large alluvial fan traversing slope upstream. Channel bed width measured on road (may not be representative). Date of survey: 8/18/01				

Additional Resource Information

Soils/Water: Additional detailed notes on stream crossing sites for the associated temporary road within and through proposed units 1984, 1985, and 1981 are available in Fish/Hydro notes for those units. Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 7568

Project Finger Mountain	System Inbetween	Begin Terminus LTF	Land Use Designation Timber Production, Modified Landscape
Route No. 7568	Route Name Inbetween Creek	End Terminus End of existing road	Map Reference FM Road Map B
Begin Milepost 0.00	Length 2.66	Status Existing	Map Quarter Quad Sitka D5

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Collector	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D	0	1.91	2	2

Maintenance Narrative: The first 1.91 miles will be in Maintenance Level 2, stormproof. Road will be crowned and drivable dips will be put in place to keep water off the surface. Drainage structures will be maintained. The last 0.75 miles are not utilized in any Alternatives and has an Operational Maintenance Level of 1 with an Objective Maintenance Level of 2, storm-proof.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Inactive

Traffic Management Strategies

Alternatives: B, D
Encourage: N/A
Accept: Hikers, bicycles
Discourage: ORVs, motorcycles
Prohibit: N/A
Eliminate: Standard passenger cars, High clearance vehicles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive water-barring will discourage ORV use on the first 1.91 miles. It is expected that post sale vehicle use will be minimal.

Site Specific Design Criteria

Road Location: Existing road

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Map B. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	(0.161)	Stream Class:	1	Process Group:	MM	Substrate:	Gravel
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	8%	Downstream Gradient:	4%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/7/01				

Stream Crossing #: (MP):	(0.276)	Stream Class:	2	Process Group:	HC	Substrate:	Gravel, small cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	4	Upstream Gradient:	16%	Downstream Gradient:	19%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Stream becomes subterranean 25 ft above road. Date of survey: 7/7/01				

Stream Crossing #: (MP):	(0.345)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel small cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	12%	Downstream Gradient:	14%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Shotgun/perched pipe. Rainbow trout found in 2001. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(0.408)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	9%	Downstream Gradient:	15%
Structure:	24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 7/7/01				

Stream Crossing #: (MP):	(0.703)	Stream Class:	2	Process Group:	HC	Substrate:	Gravel
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	20%	Downstream Gradient:	12%
Structure:	36" cmp	Fish Passage Needed:	N	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Upstream habitat becomes marginal (Class IV) due to increasing gradient and lack of pools. Date of survey: 7/7/01				

Stream Crossing #: (MP):	12 (0.864)	Stream Class:	3	Process Group:	HC	Substrate:	Bedrock, boulders, and cobble
Bankfull Width:	20 ft	Channel Bed Width:	20	Upstream Gradient:	27%	Downstream Gradient:	<20 ft/72 ft
Structure:	(buried)	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	Major recent debris torrent/slide down this channel (along W boundary or Unit 1450) is covering road = unstable. *Need additional on-site hydrology review to determine proper structure. (GK) In 2001, RCS crew noted cmp buried under large amount of debris in this area. Dates of survey: 6/17/97, 7/7/01				

Stream Crossing #: (MP):	(1.176)	Stream Class:	2	Process Group:	HC	Substrate:	
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	14%	Downstream Gradient:	14%
Structure:	36" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/8/01				

Stream Crossing #: (MP):	(1.248)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel small cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	16%	Downstream Gradient:	19%
Structure:	24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 7/ 8/01				

Stream Crossing #: (MP):	(1.292)	Stream Class:	2	Process Group:	HC	Substrate:	
Bankfull Width:	3 to 5 ft	Channel Bed Width:	<2 ft	Upstream Gradient:	14%	Downstream Gradient:	14%
Structure:	24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Upstream consists of 2 small seeps = marginal habitat. Cutthroat and DV found downstream in 2001. Date of survey: 7/8/01				

Stream Crossing #: (MP):	(1.426)	Stream Class:	2	Process Group:	HC	Substrate:	Gravels, cobbles
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	17%	Downstream Gradient:	12%
Structure:	24" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/8/01				

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Stream Crossing #: (MP):	(1.468)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel small cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	4	Upstream Gradient:	15%	Downstream Gradient:	10%
Structure:	36"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	14	Stream Class:	4	Process Group:		Substrate:	
Bankfull Width:		Channel Bed Width:		Upstream Gradient:		Downstream Gradient:	
Structure:	cmp	Fish Passage Needed:		BMPs:		Incision Depth:	
Source Code:	1	Narrative:	GMK walked this road segment in 1997 and observed no significant channel here.				

Stream Crossing #: (MP):	(1.573)	Stream Class:	1	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	11%	Downstream Gradient:	7%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Fill falling thru deck by brow logs. DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.600)	Stream Class:	2	Process Group:	MM	Substrate:	Fine gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	3	Upstream Gradient:	15%	Downstream Gradient:	3%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Stream diverted in ditch 100 ft before pipe. Downstream runs along ditch of spur 75682. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.637)	Stream Class:	1	Process Group:	MM	Substrate:	Fine gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	13%	Downstream Gradient:	5%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Bear impact on bridge; log chewed half thru. Cutthroat found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	18 (1.665)	Stream Class:	2	Process Group:	MM	Substrate:	Organic, gravel, cobble
Bankfull Width:	2 to 4 ft	Channel Bed Width:	3	Upstream Gradient:	9%	Downstream Gradient:	2%
Structure:	36"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	Small Class II stream in center of Unit 1590; is Class IV further uphill. Dates of survey: 6/17/97, 7/9/01				

Stream Crossing #: (MP):	(1.698)	Stream Class:	2	Process Group:	MM	Substrate:	Fine and course gravel
Bankfull Width:	8 to 10 ft	Channel Bed Width:	4	Upstream Gradient:	14%	Downstream Gradient:	5%
Structure:	48" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.743)	Stream Class:	1	Process Group:	MM	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	3	Upstream Gradient:	9%	Downstream Gradient:	5%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Left brow log has fallen off. DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.761)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel
Bankfull Width:		Channel Bed Width:	10	Upstream Gradient:	11%	Downstream Gradient:	8%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Upstream consists of 2 channels; bed widths are combined. Cutthroat and DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.830)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel sand
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	13%	Downstream Gradient:	7%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.841)	Stream Class:	2	Process Group:	HC	Substrate:	Sand Fine gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	14%	Downstream Gradient:	10%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 7/9/01				

Stream Crossing #: (MP):	(1.868)	Stream Class:	2	Process Group:	HC	Substrate:	Large and small cobble
Bankfull Width:		Channel Bed Width:	4	Upstream Gradient:	10%	Downstream Gradient:	9%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 7/9/01				

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Stream Crossing #: (MP):	(1.906)	Stream Class:	2	Process Group:	HC	Substrate:	Fine, course gravel
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	18%	Downstream Gradient:	17%
Structure:	18" cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Cutthroat found in 2001. Date of survey: 7/10/01				

Stream Crossing #: (MP):	(1.915)	Stream Class:	2	Process Group:	HC	Substrate:	Sand
Bankfull Width:	5 to 10 ft	Channel Bed Width:	2	Upstream Gradient:	12%	Downstream Gradient:	14%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Perched pipe; marginal habitat upstream; connects with MP 1.906 downstream. Cutthroat found in 2001. Date of survey: 7/10/01				

Stream Crossing #: (MP):	(1.996)	Stream Class:	2	Process Group:	HC	Substrate:	Fine, course gravel, cobble
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	17%	Downstream Gradient:	13%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Right brow log has fallen off. 4 ft. temporary organic barrier downstream, no fish found above it (DV found below). Date of survey: 7/10/01				

Stream Crossing #: (MP):	(2.027)	Stream Class:	2	Process Group:	HC	Substrate:	Organic Fine gravel
Bankfull Width:	**	Channel Bed Width:	2	Upstream Gradient:	15%	Downstream Gradient:	22%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Perched pipe; marginal habitat upstream; covered with 3ft clearcut slash. **Measurement not taken --stream subterranean at site. Cutthroat found in 2001. Date of survey: 7/10/01				

Stream Crossing #: (MP):	(2.066)	Stream Class:	2	Process Group:	HC	Substrate:	Gravels
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	30%	Downstream Gradient:	13%
Structure:	36"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Above road there is a short gradient barrier then it flattens to 5%. No passage needed due to this barrier. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.100)	Stream Class:	2	Process Group:	HC	Substrate:	Boulders
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	22%	Downstream Gradient:	18%
Structure:	36"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Perched pipe. Limited habitat upstream due to increasing gradient. DV found downstream in 2001. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.120)	Stream Class:	2	Process Group:	HC	Substrate:	Boulders Small cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	22%	Downstream Gradient:	14%
Structure:	48"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	DV found in 2001. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.160)	Stream Class:	2	Process Group:	HC	Substrate:	Gravels
Bankfull Width:	3 to 5 ft	Channel Bed Width:	1	Upstream Gradient:	21%	Downstream Gradient:	13%
Structure:	18"cmp	Fish Passage Needed:	N	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	RCS found fish habitat downstream only = Class IV upstream. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.186)	Stream Class:	2	Process Group:	HC	Substrate:	Fine gravel, cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	4	Upstream Gradient:	20%	Downstream Gradient:	15%
Structure:	24"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	4 ft temporary barrier (organic) found downstream. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.238)	Stream Class:	3	Process Group:	HC	Substrate:	Boulders Small cobble
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	38%	Downstream Gradient:	24%
Structure:	48"cmp	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.254)	Stream Class:	3	Process Group:	HC	Substrate:	Fine gravel Small cobble
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	25%	Downstream Gradient:	26%
Structure:	24"cmp	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.285)	Stream Class:	3	Process Group:	AF	Substrate:	Boulders Fine gravel
Bankfull Width:	10 to 15 ft	Channel Bed Width:	7	Upstream Gradient:	26%	Downstream Gradient:	16%
Structure:	60"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	DV found downstream in 2001. Upstream habitat becoming marginal above road due to increasing gradient. Stream becoming Class III. Date of survey: 7/11/01				

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Stream Crossing #: (MP):	(2.311)	Stream Class:	2	Process Group:	HC	Substrate:	Sand Fine gravel
Bankfull Width:	5 to 10 ft	Channel Bed Width:	3	Upstream Gradient:	17%	Downstream Gradient:	22%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	Inlet buried; stream diverted to ditch and joining stream at MP 2.285. No flow below culvert due to block. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.327)	Stream Class:	3	Process Group:	AF	Substrate:	Fine gravel Small cobble
Bankfull Width:		Channel Bed Width:	5	Upstream Gradient:	14%	Downstream Gradient:	22%
Structure:	36"cmp	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	RCS found 4 ft fish barrier downstream. Inlet buried; stream fans out onto road. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.369)	Stream Class:	3	Process Group:	HC	Substrate:	Fine gravel Large cobble
Bankfull Width:	5 to 10 ft	Channel Bed Width:	5	Upstream Gradient:	22%	Downstream Gradient:	19%
Structure:	24"cmp	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	
Source Code:	1	Narrative:	RCS noted good habitat at road crossing site but found a 4 ft barrier downstream. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.536)	Stream Class:	2	Process Group:	HC	Substrate:	Gravels
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	19%	Downstream Gradient:	11%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	RCS found outlet 20% crushed. Marginal habitat upstream due to clearcut slash. Date of survey: 7/11/01				

Stream Crossing #: (MP):	(2.545)	Stream Class:	2	Process Group:	HC	Substrate:	Gravels
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	19%	Downstream Gradient:	11%
Structure:	18"cmp	Fish Passage Needed:	Y	BMPs:	* Class II	Incision Depth:	
Source Code:	1	Narrative:	This stream connects with MP 2.536 below road. Outlet is 30% crushed and habitat above road is marginal due to clearcut slash. Date of survey: 7/11/01				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rockpits for first mile from LTF to minimize visual impacts to Tenakee Inlet; locate sort yards and fuel dumps to be unobtrusive. Contact Landscape Architect for assistance.

Soils/Water: Major recent debris torrent/slide down channel #12 (along W boundary of Unit 1450) is covering road. This channel needs additional on-site hydrology review to determine proper structure size. Stream crossings need additional fish/hydro review prior to design.

Heritage: An archeologist will be present during reconstruction of approximately 0.75 miles that is within the high probability zone for heritage sites, to insure no unknown heritage sites are found and/or affected.

ROAD MANAGEMENT OBJECTIVES: ROAD 75682

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	7568	Timber Production
Route No.	Route Name	End Terminus	Map Reference
75682	Inbetween 2	Last landing	FM Road Map B
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.38	Existing	Sitka D5

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B, D	0	0.38	2	1

Maintenance Narrative: Maintenance Level 1, put in storage: Remove culverts from live streams. Bypass ditch relief culverts with waterbars leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Closed
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Traffic Management Strategies

Alternatives:	B, D
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	Standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive waterbarring and removal of drainage structures on live streams will eliminate road use.

Site Specific Design Criteria (Road 75682)

Road Location: Existing

Wetlands: During reconstruction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Map B. Streams are listed in order of milepost (MP) where crossing numbers are unavailable.

Stream Crossing #: (MP):	(0.024)	Stream Class:	1	Process Group:	MM	Substrate:	Sand, organic
Bankfull Width:	5 to 10 ft	Channel Bed Width:	4	Upstream Gradient:	1%	Downstream Gradient:	10%
Structure:	18" cmp	Fish Passage Needed:	N	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Strange stream crossing: small (2 ft), marginal habitat crosses road and immediately meets with this larger Class I stream. Fish passage is not required but protection will be needed for the immediate Class I habitat below. Coho found in 2001. Date of survey: 7/19/01				

Stream Crossing #: (MP):	17 (0.041)	Stream Class:	1	Process Group:	FP	Substrate:	Large, Small cobble
Bankfull Width:	40 to 50 ft	Channel Bed Width:	33	Upstream Gradient:	2%	Downstream Gradient:	2%
Structure:	Log stringer bridge	Fish Passage Needed:	Y	BMPs:	*** Bridge	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/19/01				

Stream Crossing #: (MP):	(0.070)	Stream Class:	1	Process Group:	MM	Substrate:	Fine gravel, organic
Bankfull Width:	3 to 5 ft	Channel Bed Width:	2	Upstream Gradient:	4%	Downstream Gradient:	3%
Structure:	24" cmp	Fish Passage Needed:	Y	BMPs:	* Class I	Incision Depth:	
Source Code:	1	Narrative:	Date of survey: 7/19/01				

Stream Crossing #: (MP):	(0.260)	Stream Class:	3	Process Group:	AF	Substrate:	Large, Small cobble
Bankfull Width:		Channel Bed Width:	25	Upstream Gradient:		Downstream Gradient:	
Structure:	cmp	Fish Passage Needed:	N	BMPs:	** Class III	Incision Depth:	1
Source Code:	1	Narrative:	RCS found large amount of alluvial fan deposition on road (60 ft). Possibly a cmp buried here. Date of survey: 7/19/01				

Additional Resource Information

Soils/Water: Additional detailed notes on stream crossing sites for the associated temporary road within proposed Unit 1610 are available in the Fish/Hydro field notes for that unit. Need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 7605

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	7568	Timber Production
Route No.	Route Name	End Terminus	Map Reference
7605	South Seal	Unit 1720	FM Road Map A, and B
Begin Milepost	Length	Status	Map Quarter Quad
0.00	6.29	Planned	Sitka D5 SE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Collector	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible second entry in 5-10 years depending on salvage or future harvest opportunities. The first 2.28 miles will be a collector road for future activities, if Alternative B is selected.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B	0	2.28	2	2
B	2.28	6.29	2	1
D	0	0.88	2	1

Maintenance Narrative: Maintenance Level 2, (2.28 mi.) storm-proof. Remove culverts from live streams. Bypass ditch relief culverts with water-bars leaving culverts in place for future use. Provide additional water-bars as necessary on steep grades to control runoff. Maintenance Level 1, Alt D and (4.01 mi) of Alt B, put in storage, remove all drainage structures, add water-bars as needed to control runoff. Allow road to grow closed.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Alt. B: inactive – (2.28 mi.) Alt. B: closed – (4.01 mi.) Alt. D: closed
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Traffic Management Strategies

Alternatives:	B (0 - 2.28 mi.)	Alternatives:	D & B (4.01 mi.)
Encourage:	N/A	Encourage:	N/A
Accept:	Hikers, bicycles	Accept:	Hikers, bicycles
Discourage:	ORVs, motorcycles, High Clearance vehicles	Discourage:	N/A
Prohibit:	N/A	Prohibit:	N/A
Eliminate:	Standard passenger cars	Eliminate:	Standard passenger cars, high clearance vehicles, ORVs, motorcycles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Extensive water-barring and removal of drainage structures on live streams will eliminate ORV use, past milepost 2.28 in ALT B. It is expected that vehicle use post sale will be minimal.

Site Specific Design Criteria (Road 7605)

Road Location: The road climbs from Inbetween Creek to the ridge top in order to access the back of the valley. It then follows along the ridge before dropping down and crossing a creek. It then follows the south side of the creek before crossing back over to Unit 1720. Bridge, switchback, and unit locations were the control points for the road location. The road will require two switchbacks near the ridge top. The lower (first) one and half of the upper (second) were located to screen the road from Tenakee Inlet. The upper half of the second one will be seen from the Inlet. Near the back of the valley, the road was moved upslope to avoid a large alluvial fan with multiple drains and overflow channels, talus build-up on banks, and considerable rock debris piles up hill.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17,14.8).

Rock Pits: During periods of high rainfall (as defined in current regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from an existing rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Maps A and B. Streams are listed in order of station marker where crossing numbers are unavailable.

Stream Crossing#:		Stream Class:	2	Process Group:	HC5	Substrate:	Sand/Sm cobble
Station Marker:	6 + 13						
Bankfull Width:	5.3	Channel Bed Width:	3.7	Gradient:	25		
Depth:	0.9						
Structure:	24x32cmp	Passage:	Y	BMPs:	* Class II	Incision Depth:	4.6
						Width:	21.1
Source Code:	1	Narrative:	Electro-shocked to verify presence of fish – 1 cutthroat trout captured Date of survey: 10/11/01				

Stream Crossing#:		Stream Class:	3	Process Group:	HC5	Substrate:	Lg & sm cobble Gravel
Station Marker:	34 + 12						
Bankfull Width:	10.0	Channel Bed Width:	5.5	Gradient:	21		
Depth:	1.5						
Structure:	36x40cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	3.7
						Width:	32.0
Source Code:	1	Narrative:	Electro-shocked to verify presence of fish – 1 cutthroat trout captured. Date of survey: 10/11/01				

Stream Crossing#:		Stream Class:	3	Process Group:	HC5	Substrate:	Bedrock Bldr/cbl
Station Marker:	167 + 44						
Bankfull Width:	18.0	Channel Bed Width:	6.0	Gradient:	30		
Depth:	3.4						
Structure:	Bridge	Passage:		BMPs:	*** Bridge	Incision Depth:	8.0
						Width:	36.0
Source Code:	1	Narrative:	Date of survey: 10/11/01				

Stream Crossing#:	5	Stream Class:	3	Process Group:	HC2	Substrate:	Lg & sm cobble
Station Marker:	173 + 47						
Bankfull Width:	7.2	Channel Bed Width:	2.3	Gradient:	35		
Depth:	1.6						
Structure:	24x32cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	2.1
						Width:	9.2
Source Code:	1	Narrative:	Date of survey: 10/11/01				

Stream Crossing#:	6	Stream Class:	3	Process Group:	HC1	Substrate:	Sm cobble gravel
Station Marker:	207 + 36						
Bankfull Width:	14.0	Channel Bed Width:	5.0	Gradient:	7		
Depth:	2.2						
Structure:	36x40cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	2.8
						Width:	23.4
Source Code:	1	Narrative:	Gradient barrier located downstream (50% gradient); 650' elevation. Dates of survey: 6/16/97, 10/11/01				

Stream Crossing#:	7	Stream Class:	3	Process Group:	HC0	Substrate:	cobble, gravel, boulder
Station Marker:							
Bankfull Width:	2-4 ft	Channel Bed Width:	3	Gradient:	27%		
Depth:							
Structure:	36" cmp	Passage:		BMPs:	** Class III	Incision Depth:	<10 ft
Source Code:	1	Narrative:	Active stream incision depth = 2 ft. Date of survey: 6/16/97				

Stream Crossing#:	8	Stream Class:	3	Process Group:	HC5	Substrate:	boulder, cobble
Station Marker:	346 + 30						
Bankfull Width:	50 ft	Channel Bed Width:	50	Gradient:	35%		
Depth:							
Structure:	60 ft bridge (see notes)	Passage:	N	BMPs:	** Class III	Incision Depth:	5 ft, active channel
Source Code:	1	Narrative:	Several large (72"+) pipes with armored dip may work for seasonal use. Needs further review or input from fisheries. Dates of survey: 6/16/97, 10/11/01				

Appendix C

Stream Crossing#:	9	Stream Class:	3	Process Group:	HC4	Substrate:	Bldr/lg cobble
Station Marker:	351 + 83						
Bankfull Width:	18.0	Channel Bed Width:	9.5	Gradient:	29		
Depth:	5.7						
Structure:	BRIDGE	Passage:	N	BMPs:	*** Bridge	Incision Depth:	8.2
						Width	29.2
Source Code:	1	Narrative:	Hydro site survey required. Dates of survey: 6/16/97, 10/11/01				

Stream Crossing#:	10	Stream Class:	3	Process Group:	HC5	Substrate:	Cobble Gravel
Station Marker:	356 + 30						
Bankfull Width:	9.4	Channel Bed Width:	2.8	Gradient:	35		
Depth:	1.8						
Structure:	18x32cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	5.8
						Width	37.2
Source Code:	1	Narrative:	Change designated stream class from 4 to 3; stream was not electro-fished. Dates of survey: 6/16/97, 10/11/01				

Stream Crossing#:	11	Stream Class:	3	Process Group:	HC5	Substrate:	Cobble
Station Marker:	365 + 17						
Bankfull Width:	10.3	Channel Bed Width:	4.7	Gradient:	33		
Depth:	1.4						
Structure:	18x36cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	3.2
						Width	29.8
Source Code:	1	Narrative:	Stream was electro-fished but no fish were captured. Change designated stream class from 4 to 3. Dates of survey: 6/16/97, 10/11/01				

Stream Crossing#:		Stream Class:	4	Process Group:	HC0	Substrate:	Cobble
Station Marker:							
Bankfull Width:	3 ft	Channel Bed Width:	3	Gradient:	%		
Depth:							
Structure:	24" cmp	Passage:		BMPs:		Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	Small dry channel in larger V-notch with evident colluvial deposits. Date of survey: 6/16/97				

Stream Crossing#:		Stream Class:	3	Process Group:	HC1	Substrate:	Lg cbl/ bldr
Station Marker:	369 + 70						
Bankfull Width:	7.8	Channel Bed Width:	1.8	Gradient:	29		
Depth:	1.1						
Structure:	18x32cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	1.4
						Width	9.5
Source Code:	1	Narrative:	Date of survey: 10/11/01				

Stream Crossing#:		Stream Class:	2	Process Group:	HC5	Substrate:	Cobble
Station Marker:	370 + 15						
Bankfull Width:	10.8	Channel Bed Width:	4.3	Gradient:	11		
Depth:	1.9						
Structure:	24x36cmp	Passage:	Y	BMPs:	* Class II	Incision Depth:	6.8
						Width	36.0
Source Code:	1	Narrative:	Electro-fished – 1 cutthroat trout and 1 Dolly Varden char captured during sampling above & below crossing location. Date of survey: 10/11/01				

Stream Crossing#:	15	Stream Class:	2	Process Group:	MM2	Substrate:	Boulder cobble
Station Marker:	370 + 73						
Bankfull Width:	37.5	Channel Bed Width:	27.9	Gradient:	3	Timing Dates:	Yes
Depth:	2.8						
Structure:	BRIDGE	Passage:	Y	BMPs:	* Class II	Incision Depth:	5.5
						Width	63.2
Source Code:	1	Narrative:	Mainstream of Inbetween Creek. Electro-fished – Dolly Varden char and cutthroat trout captured Hydro site survey required. Date of survey: 10/11/01				

Stream Crossing#:	16	Stream Class:	2	Process Group:	MM1	Substrate:	Lg cbl Gravel
Station Marker:	372 + 20						
Bankfull Width:	17.3	Channel Bed Width:	5.2	Gradient:	6	Timing Dates:	Yes
Depth:	2.1						
Structure:	48x34cmp	Passage:	Y	BMPs:	* Class II	Incision Depth:	4.5
						Width	30.5
Source Code:	1	Narrative:	Electro-fished – 4 cutthroat trout captured. Dates of survey: 6/16/97, 10/11/01				

Stream Crossing#:		Stream Class:	2	Process Group:	MM0	Substrate:	Boulder Cobble
Station Marker:	376 + 15						
Bankfull Width:	7.0	Channel Bed Width:	4.4	Gradient:	22		
Depth:	2.6						
Structure:	CHANGE 36x40cmp	Passage:	Y	BMPs:	* Class II	Incision Depth:	5.2
						Width	13.9
Source Code:	1	Narrative:	Electro-fished – 6 cutthroat trout captured. Fish found up to 75' upstream of crossing location. Change designated stream classification from 4 to 2. Change pipe size from 24" to 36" to accommodate amount of flow and bed-load sediment and width of channel. Date of survey: 10/11/01				

Stream Crossing#:		Stream Class:	4	Process Group:	HC0	Substrate:	
Station Marker:							
Bankfull Width:	2 to 4 ft	Channel Bed Width:	3	Gradient:	%		
Depth:							
Structure:	24" cmp	Passage:		BMPs:		Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	P-line #382+00 (Stream #4, Unit 1770 in GMK notes) Date of survey: 6/16/97				

Appendix C

Stream Crossing#:		Stream Class:	4	Process Group:	HC0	Substrate:	cobble, boulder, gravel
Station Marker:							
Bankfull Width:	4 to 6 ft	Channel Bed Width:	5	Gradient:	20%		
Depth:							
Structure:	36 or 48" cmp	Passage:	N	BMPs:		Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	Class II below road. P-line #383+50 (Stream #3, Unit 1770 in GMK notes) Date of survey: 6/16/97				

Stream Crossing#:		Stream Class:	4	Process Group:	HC0	Substrate:	cobble, small boulder
Station Marker:							
Bankfull Width:	2 to 4 ft	Channel Bed Width:	3	Gradient:	25%		
Depth:							
Structure:	24" cmp	Passage:		BMPs:		Incision Depth:	1 ft
Source Code:	1	Narrative:	P-line #388+00 (Stream #2, Unit 1770 in GMK notes). Date of survey: 6/16/97				

Stream Crossing#:	22	Stream Class:	3	Process Group:	HC5	Substrate:	boulder to 18", cobble
Station Marker:							
Bankfull Width:	10 to 14 ft	Channel Bed Width:	8	Gradient:	22%		
Depth:							
Structure:	60" or larger cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	4 to 8 ft
Source Code:	1	Narrative:	P-line #388+85 (Stream #1, Unit 1770 in GMK notes) Date of survey: 6/16/97				

Stream Crossing#:	23	Stream Class:	2	Process Group:	AF0	Substrate:	
Station Marker:							
Bankfull Width:	3 ft, and 3 to 5 ft	Channel Bed Width:	3, 4	Gradient:	%		
Depth:							
Structure:	need two 24" cmps	Passage:	N	BMPs:	* Class II	Incision Depth:	1 to 2 ft
Source Code:	1	Narrative:	P-line #393+85 & 394+15 = paired small channels, Class IV above road Date of survey: 6/16/97				

Stream Crossing#:	24	Stream Class:	2	Process Group:	MM0	Substrate:	Fine gravel to cobble
Station Marker:							
Bankfull Width:	4 to 6 ft	Channel Bed Width:	5	Gradient:	%		
Depth:							
Structure:	36" cmp	Passage:	N	BMPs:	* Class II	Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	P-line #395+20, Class II at road and small Class III just uphill of road. Date of survey: 6/16/97				

Stream Crossing#:	30	Stream Class:	2	Process Group:	MM1	Substrate:	Boulder
Station Marker:	427 + 49						
Bankfull Width:	31.2	Channel Bed Width:	22.0	Gradient:	15		
Depth:	3.1						
Structure:	BRIDGE	Passage:	Y	BMPs:	*** Bridge	Incision Depth:	6.2
						Width:	48.7
Source Code:	1	Narrative:	Electro-fished – Dolly Varden char captured Hydro site survey for bridge required. Date of survey: 10/11/01				

Stream Crossing#:	428 + 05	Stream Class:	2	Process Group:	MM2	Substrate:	Cobble Boulder
Station Marker:							
Bankfull Width:	5.2	Channel Bed Width:	2.5	Gradient:	9		
Depth:	1.0						
Structure:	24x40cmp	Passage:	Y	BMPs:	* Class II	Incision Depth:	10.7
						Width:	25.0
Source Code:	1	Narrative:	Electro-fished – 1 Dolly Varden char and 1 cutthroat trout captured. Date of survey: 10/11/01				

Stream Crossing#:	31	Stream Class:	3/4	Process Group:	HC0	Substrate:	boulder, cobble
Station Marker:							
Bankfull Width:	3 to 5 ft	Channel Bed Width:	4	Gradient:	45%		
Depth:							
Structure:	36" cmp	Passage:	N	BMPs:	** Class III	Incision Depth:	1 to 3 ft
Source Code:	1	Narrative:	Evident colluvial deposits on steep hillside, marginal Class III or Class IV Date of survey: 6/16/97				

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rock pits from mile marker 4.58 to intersection with 76051 to minimize visual impacts to Tenakee Inlet.

Soils/Water: Between units 1550 and 1551, the proposed road descends via a double switchback through a very steep area. A soil scientist worked closely with the road engineer to find a location that will minimize the risk of the road causing a landslide. Partial and full-bench construction will be required in places to further minimize the risk of a landslide. When the road is closed, the fill will be pulled off of the side slope, and the road prism will be strongly outsloped, which, combined with water-bars, will prevent water accumulating on and saturating the road prism. Stream crossings need additional fish/hydro review prior to design.

ROAD MANAGEMENT OBJECTIVES: ROAD 76051

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	7605	Timber Production
Route No.	Route Name	End Terminus	Map Reference
76051	Beth	Unit 1551	FM Road Maps B, and C
Begin Milepost	Length	Status	Map Quarter Quad
0.00	1.76	Planned	Sitka-D5 SE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
D	0	1.76	2	1

Maintenance Narrative: Maintenance Level 1, put in storage. Remove culverts from live streams. Bypass ditch relief culverts with waterbars, leaving culverts in place for future use. Provide additional waterbars as necessary on steep grades to control runoff.

Operation Criteria

Highway Safety Act: No **Jurisdiction:** National Forest ownership **AFRPR Status:** Closed

Traffic Management Strategies

Alternatives:	D
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	ORVs, Motorcycles, Standard passenger cars, High clearance vehicles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. The removal of drainage structures will eliminate post sale vehicular traffic.

Site Specific Design Criteria (Road 76051)

Road Location: The road corridor begins at Road 7605 and contours around the ridge to the west before turning south. Sideslopes are less than 50%. The grade on the road is less than 10%. The corridor is located through commercial timber, which should screen the road from Tenakee Inlet.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers are shown on road map.

Stream Crossing#	1	Stream Class:	3	Channel Type:	HC6	Incision Depth:	72 ft
Bankfull Width:	20 ft	Channel Bed Width:	20	Gradient:	27%	Substrate:	bedrock boulders and cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	2	Stream Class:	3	Channel Type:	HC6	Incision Depth:	72 ft
Bankfull Width:	20 ft	Channel Bed Width:	20	Gradient:	27%	Substrate:	bedrock boulders and cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	3	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:	13	Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	4	Stream Class:	3	Channel Type:	HC5	Incision Depth:	15 ft
Bankfull Width:	13 ft	Channel Bed Width:	13	Gradient:	28%	Substrate:	large rubble to bedrock
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

Additional Resource Information

Visual/Recreation: Mitigation includes: minimum width clearing to maintain tree cover along road corridor; use existing topography and vegetation to screen roadbed; locate and design rock pits to minimize visual impacts to Tenakee Inlet.

Soils/Water: Needs review by fisheries/hydrology at layout.

ROAD MANAGEMENT OBJECTIVES: ROAD 76054

Project	System	Begin Terminus	Land Use Designation
Finger Mountain	Inbetween	7605	Timber Production
Route No.	Route Name	End Terminus	Map Reference
76054	Sammie seal	Unit 1731	FM Road Map A
Begin Milepost	Length	Status	Map Quarter Quad
0.00	0.63	Planned	Sitka D5 SE

General Design Criteria and Elements

Functional Class	Service Life	Surface	Width	Design Speed	Traffic Service Level	Critical Vehicle	Design Vehicle
Local	Intermittent	Shotrock	14 ft.	10	D	Logging truck	Logging truck

Intended Purpose/Future Use: Silvicultural activities. Possible re-entry in 5-10 years depending on salvage opportunities.

Maintenance Criteria

Alternatives	Begin Milepost	End Milepost	Operational Maintenance Level	Objective Maintenance Level (desired future condition)
B	0	0.63	2	1

Maintenance Narrative: Maintenance Level 1, put in storage. Remove all culverts. Provide additional waterbars as necessary on steep grades to control runoff. Allow alders to encroach on the roadway.

Operation Criteria

Highway Safety Act:	No	Jurisdiction:	National Forest ownership	AFRPR Status:	Closed
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Traffic Management Strategies

Alternatives:	B
Encourage:	N/A
Accept:	Hikers, bicycles
Discourage:	N/A
Prohibit:	N/A
Eliminate:	ORVs, motorcycles, standard passenger cars, high clearance vehicles

Travel Management Narrative: This road system is not connected to any public or community road systems or to any ferry system terminal. Removal of culverts will eliminate vehicular traffic.

Site Specific Design Criteria (Road 76054)

Road Location: The road corridor rolls along the contour accessing units 1730 and 1731.

Wetlands: Wetlands were unavoidable along some portions of the location due to safety, engineering design constraints and consideration for other resources. High value wetlands (such as rich fens and estuaries) were avoided. During construction, all appropriate federal and state BMPs will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8).

Rock Pits: During periods of high rainfall (as defined in current Regional specifications), blasting operations will be suspended at quarries near potentially unstable sites where ground vibration may induce mass movement (BMP 14.6). Borrow for initial construction will come from a proposed rock pit at the LTF site, which is planned as part of the LTF development.

Stream Crossings: Stream crossing numbers correspond to Road Map A.

Stream Crossing#	19	Stream Class:	3	Channel Type:	HC6	Incision Depth:	72ft
Bankfull Width:	20ft	Channel Bed Width:	20	Gradient:	27%	Substrate:	bedrock boulders and cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:					

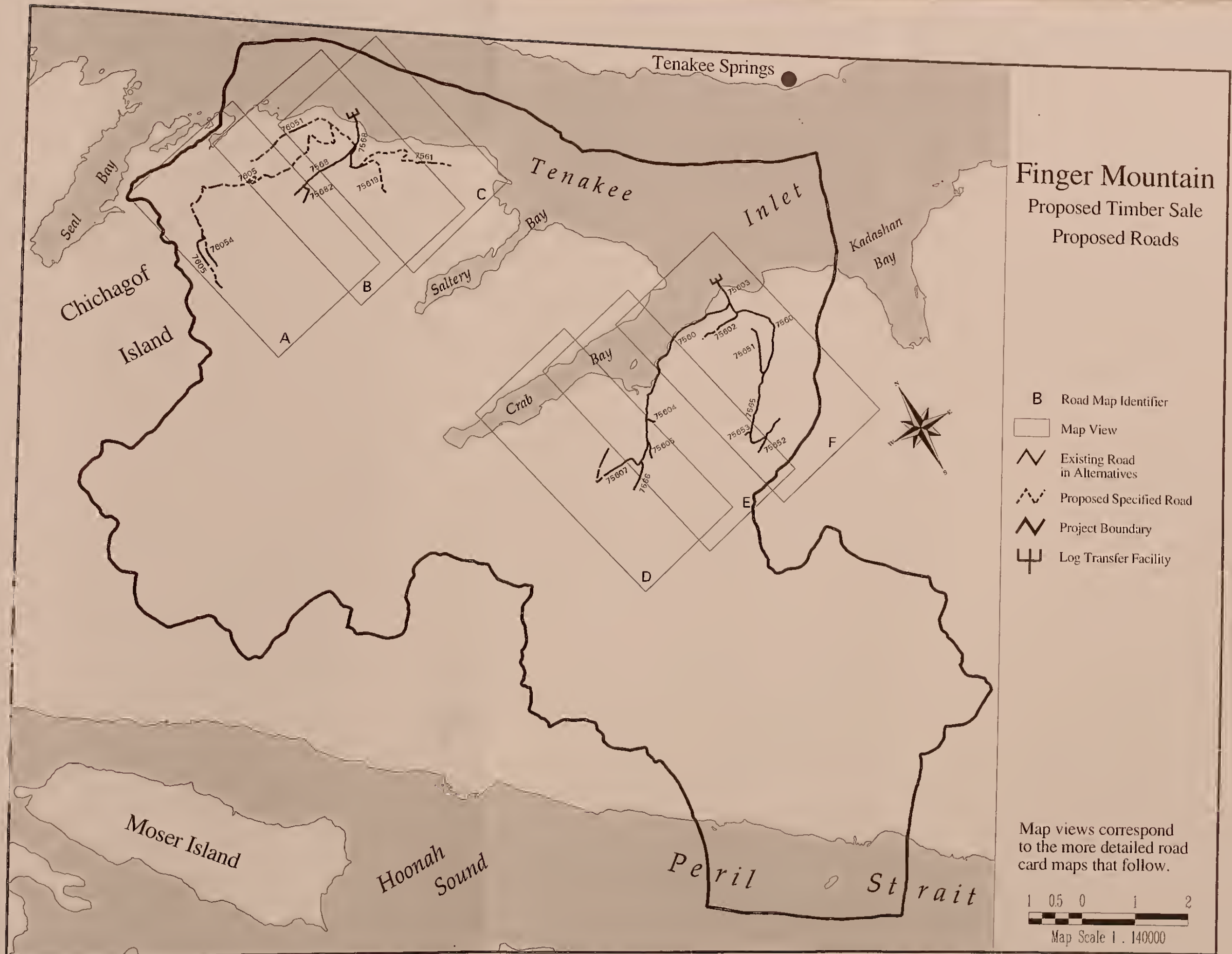
Stream Crossing#	21	Stream Class:	3	Channel Type:	HC0	Incision Depth:	10ft
Bankfull Width:	3 to 5 ft	Channel Bed Width:	4	Gradient:	27%	Substrate:	boulder, cobble, gravel
Structure:	48" cmp	Passage:		Timing Dates:		BMPs:	
Source Code:	1	Narrative:					

Stream Crossing#	25	Stream Class:	1	Channel Type:	AF2	Incision Depth:	7 ft
Bankfull Width:	13 ft	Channel Bed Width:	11	Gradient:	11%	Substrate:	Coarse gravel >small boulders
Structure:		Passage:		Timing Dates:	Yes	BMPs:	
Source Code:	3	Narrative:					

Stream Crossing#	26	Stream Class:	3	Channel Type:	HC6	Incision Depth:	72ft
Bankfull Width:	20ft	Channel Bed Width:	20	Gradient:	27%	Substrate:	bedrock boulders and cobble
Structure:		Passage:		Timing Dates:		BMPs:	
Source Code:	3	Narrative:	Probable AF1 or AF2 in road crossing area & not very incised.				

Additional Resource Information

Soils/Water: Needs further on-ground review prior to road design.





Contour Interval 100 Feet

.25 0.125 0 .25 0.5

1 inch = 2640 feet

Map Scale 1 : 31680

Road Map A



Contour Interval 100 Feet

.25 0.125 0 .25 0.5

1 inch = 2640 feet



Map Scale 1 : 31680

Road Map B



Contour Interval 100 Feet



Map Scale 1 : 31680

1 inch = 2640 feet

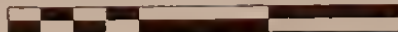
Road Map C



Contour Interval 100 Feet

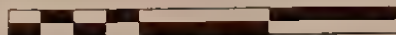
25 0.125 0 25 0.5

1 inch = 2640 feet



Map Scale 1 : 31680

Road Map D

$$1 \text{ inch} = 2640 \text{ feet}$$


Map Scale 1 : 31680

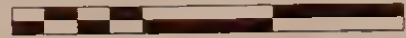
Road Map E



Contour Interval 100 Feet

.25 0.125 0 .25 0.5

1 inch = 2640 feet



Map Scale 1 : 31680

Road Map F

Appendix D

Response to Comments

Appendix A

Appendix A

Appendix D

Response to Comments

Introduction

Appendix D includes all written comments received for the Finger Mountain Timber Sale(s) Draft Environmental Impact Statement (EIS) and the Forest Service's response to the items addressed in those comments. Due to the large number of letters received, each written comment was grouped based on the similarity of comments. We received 132 letters from individuals, private organizations, and government agencies in response to the DEIS. The vast majority of respondents were from the Tenakee Springs area, with others commenting from Sitka, Ketchikan, and Juneau. Most people commented that they wanted to see "no action" selected or some lesser amount of harvest. Some comments reflected that some timber harvest would be acceptable, while others suggested that harvest was acceptable but not necessarily in this project area. All responses are annotated. The following table shows all those who responded and how their letters were characterized based on similar comments. The table below lists where each respondent may find his or her letter and responses to comments. These comments led to edits within the document to clarify points made and to further explain effects (see Chapter 2 for a summary of changes). The Selected Alternative discussed in the Record of Decision (ROD) considers all these comments. The responses to comments and copies of the letters received follow the table below.

Letters Received from Agencies, Organizations, and Individuals

The following list includes agencies, organizations, and individuals that sent comments to the Forest Service during the 45-day comment period of the Finger Mountain Timber Sale(s) Draft EIS. The table lists the location of each letter, the page on which it may be found, and the code that corresponds to the response to comments.

Commentator	City	State	Organization	Pages	Response to Comments
David Amonson	Portland	OR	Individual	33	8-2
Alaska Forest Association	Ketchikan	AK	AFAI	33-36	3-3, 7-1, 7-2, 8-1, 11-2
J. Z. Ainsworth	Sitka	AK	Individual	36	3-1, 9-1
AK Office of Governor, DGC	Juneau	AK	AKDGC	37-45	1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 2-1, 4-1, 4-2, 4-3, 6-1, 6-2, 6-3, 6-4, 7-3, 9-1, 11-3, 11-5, 11-10
AK Office of Governor, DGC	Juneau	AK	AKDGCb	45-53	1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 1-9, 2-1, 4-1, 4-2, 4-3, 6-2, 6-3, 6-4, 7-3, 9-1, 11-3, 11-5, 11-10
AK Office of Governor, DGC	Juneau	AK	AKDGCc	53-54	0-0
Mary Almy	Tenakee	AK	Individual	54	3-1, 4-1, 5-1, 11-1, 11-4
Walter Bailey	Grass Valley	CA	Individual	61	1-1
Beret Barnes	Tenakee	AK	Individual	55	3-2, 3-3, 4-2
Paul Barnes	Gustavus	AK	Individual	59	3-1, 4-1, 5-1, 6-1, 11-1
Larry Basch	Gustavus	AK	Individual	56	4-1, 5-1, 11-1, 11-4

Appendix D

Commentator	City	State	Organization	Pages	Response to Comments
Thomas J. Bauer	Pelican	AK	Individual	60	4-1, 5-1, 7-3
Patricia & Norman Blank	Unknown		Individual	58	2-1, 3-1, 4-1, 5-1, 11-4
Michael Bloal (sp?)	Gustavus	AK	Individual	57	8-2
Arthur Bloom	Tenakee	AK	Individual	55	7-4, 8-2, 11-4
Pete Bogart	Tenakee	AK	Individual	58	8-2
William E. Brown	Gustavus	AK	Individual	61	5-1
Scott Brylinsky	Sitka	AK	Individual	59	3-1, 7-3
Natasha I. Calvin	Sitka	AK	Individual	64	3-1, 4-1, 7-4
Cascadia Wildlands Project	Fairbanks	AK	Individual	66	5-1, 7-2, 7-3
Robert L. Caummisar	Grayson	KY	Individual	65	2-1, 3-2
Len & Patricia Ceder	Juneau	AK	Individual	63	2-1, 5-1
Chichagof Conservation Council	Tenakee	AK	CCC	62-63	1-1, 2-1, 3-1, 3-2, 4-1, 4-3, 5-1, 11-4, 11-6
City of Tenakee	Tenakee	AK	CTS	65-66	3-3, 5-1, 11-1, 11-8
Frank Davis	Tenakee	AK	Individual	67-68	2-1, 3-2, 5-1, 7-4, 8-2
Jerry Dzugan	Sitka	AK	Individual	68	2-1, 3-1, 7-4
Jan Eagle	Tenakee	AK	Individual	69	2-1, 4-1, 5-1, 11-1
Nedra Ebsen	Middleton	WI	Individual	70	3-2, 11-1
Robert J. Ellis	Sitka	AK	Individual	71	2-1, 3-1
Karen Emery, Mary York	Woodland	WA	Individual	69	2-1, 11-1
Craig Farrington	Douglas	AK	Individual	73	2-1, 4-1, 5-1, 6-1
Fishing Bear Charters	Tenakee	AK	Individual	71-72	1-7, 2-1, 3-2, 6-1, 11-1, 11-7
Pam & Don Fitzgerald	Sun Prairie	WI	Individual	75	3-3
Forest Conservation Council	Boca Raton	FL	FCC	73-75	1-1, 1-7, 4-2, 7-4, 11-1
Charles W. Gattas	Boca Raton	FL	Individual	76	2-1, 3-2
Joshua V. Grealish	Jarratt	VA	Individual	76	1-7
Mike Grummett	Juneau	AK	Individual	77	1-1, 11-1
Carol Hamilton	Princeton	NJ	Individual	77	3-2, 3-3
L. Stephanie Harold	Hoonah	AK	Individual	81	2-1, 3-2, 4-1, 5-1
George Y. Harry III	Bellevue	WA	Individual	78-80	1-1, 1-7, 1-8, 3-2, 4-2, 7-1, 11-1
Jim Healey	Juneau	AK	Individual	80	3-2
Larry Hura	Haines	AK	Individual	81	2-1, 8-2
George & Lynne Jensen	Gustavus	AK	Individual	82	1-1, 4-1, 5-1, 6-2, 11-4
Jodarienzo@	Unknown		Individual	84	2-1, 3-1
Claire Johnson	Sitka	AK	Individual	82	9-1
Moe & Amy Johnson	Sitka	AK	Individual	83	3-1, 4-1, 5-1, 7-3, 11-1
Norman & Doris Johnson	Sitka	AK	Individual	84	7-1, 9-1
Rebecca Joyce	Sitka	AK	Individual	85	1-1
Terry Kennedy	Tenakee	AK	Individual	89	2-1, 3-2, 8-2
Ketchikan Gateway Borough	Ketchikan	AK	Individual	85-86	3-2, 7-3, 7-4, 8-1, 8-2
Molly Kemp, Nick Olmsted	Tenakee	AK	Individual	88-89	1-1, 8-2
Kathy A. Klawieter	Rockford	MI	Individual	88	7-1, 11-7

Commentator	City	State	Organization	Pages	Response to Comments
Harvey & Ann Kortman	Tenakee	AK	Individual	87	11-4
Virginia Kuhnert	Dagsboro	DE	Individual	90	3-2, 11-1
Roger V. Lewis	Tenakee	AK	Individual	92	1-7
Erik Lie-Nielsen	Juneau	AK	Individual	91	3-2, 5-1, 7-4, 11-7
Steve & Ron Limbach	Unknown		Individual	93	11-1
Pamela A. Lucas	Sequim	WA	Individual	92	3-1, 8-2
James Mackovjak	Gustavus	AK	Individual	98	4-1, 5-1, 8-2, 11-4
Craig Mapes	Auke Bay	AK	Individual	94	1-1, 2-1, 3-1, 5-1, 11-1, 11-4
Lawrence Marx	Tenakee	AK	Individual	99-100	2-1, 3-2, 4-1, 6-1, 7-4, 8-2
Daniel McBeen	Petaluma	CA	Individual	97	8-2, 11-1
Joan M. McBeen	Tenakee	AK	Individual	99	3-1, 5-1
Samuel & Joan McBeen	Tenakee	AK	Individual	125-126	1-7, 2-1, 3-1, 3-2, 3-3, 7-4, 8-1, 8-2, 11-1, 11-2
Tim McBeen	Rohnert Park	CA	Individual	126	1-7, 3-2, 3-3, 4-3, 6-1
Mac McCamley	Beaverton	OR	Individual	100-101	2-1, 3-2, 11-1, 11-7
Dorik Mechau	Sitka	AK	Individual	98	2-1, 5-1, 7-4, 8-2, 9-1
D. S. Miller	Tenakee	AK	Individual	97	2-1, 8-2
William H. Miller	Sitka	AK	Individual	127	0-0
Don Muller	Sitka	AK	Individual	94-96	1-1, 1-6, 1-7, 11-1
Alan R. Munro	Unknown	AK	Individual	93	5-1
Richard T. Myren	Juneau	AK	Individual	101-124	6-1, 6-2, 6-3, 7-1, 8-2, 9-1
Natural Resources Defense	Olympia	WA	NRDC	127	1-7, 3-1
Donald Odenheimer	Tenakee	AK	Individual	128	2-1, 3-2, 3-3, 6-1, 8-2
Levi Odenheimer	Tenakee	AK	Individual	128	11-8
Janet L. Parsons	Seattle	WA	Individual	131	1-7, 6-3, 9-1
Megan & Walter Pasternak	Sitka	AK	Individual	133	1-7, 2-1, 3-2, 3-3, 7-1, 9-1
Geoff Pegues	Tenakee	AK	Individual	130	6-1, 7-4b, 11-1
petition	Jarratt	VA	PET	129	0-0
Leon A. Phillips	Mercer Island	WA	Individual	132-133	1-7, 3-2
Patricia Phillips	Pelican	AK	Individual	134	2-1, 9-1
Robert L. Pollard	Edgewood	WA	Individual	134	8-2, 11-1, 11-4
Gene Preston	Rancho Murieta	CA	Individual	130	1-1, 3-2, 7-4
Lance Preston	Sitka	AK	Individual	131-132	1-1, 8-2
Jim Rehfeldt	Juneau	AK	Individual	135	2-1, 3-1, 3-2, 4-1, 5-1, 11-1
Daniel Sever	Sitka	AK	Individual	143	1-7
Florian Sever	Sitka	AK	Individual	178	2-1, 3-1
Patricia Sever	Sitka	AK	Individual	181	3-1, 8-2
Elizabeth L. Shaw	Tenakee	AK	Individual	171-176	1-7, 3-2, 3-3, 4-1, 4-3,

Appendix D

Commentator	City	State	Organization	Pages	Response to Comments
					7-4, 8-2
John P. Shedd	Douglas	AK	Individual	180	3-3, 5-1, 7-4
Silver King Marine	Auke Bay	AK	SKM	180	3-1
Sitka Conservation Society	Sitka	AK	SCS	135-142	1-1, 1-5, 1-7, 1-8, 1-9, 2-1, 3-1, 3-2, 3-3, 4-2, 5-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 7-3, 7-5, 9-1, 11-1, 11-7
Sitkans for a Sound Economy	Sitka	AK	SSE	182-184	1-1, 5-1, 7-4, 8-2, 8-7, 9-1, 11-1, 11-9
Jeff Sloss	Juneau	AK	Individual	179	2-1, 4-1, 5-1, 11-1
Doris G. Smith	Sitka	AK	Individual	143	8-2, 11-1
Earl M. Smith	N. Caldwell	NJ	Individual	178	1-7, 2-1, 3-1, 6-1
Tarleton F. Smith	Sitka	AK	Individual	185	2-1, 3-2, 7-4
George F. Snyder	Wilmington	DE	Individual	179	1-1, 3-2, 7-4, 11-4
SE AK Conservation Council	Juneau	AK	SEACC	145-153	1-1, 1-6, 2-1, 3-1, 3-2, 3-3, 4-1, 5-1, 6-1, 6-2, 6-3, 6-4, 6-5, 6-7, 7-4, 9-1, 11-1, 11-14, 11-15, 11-16a, 11-16b, 11-16c
SE AK Conservation Council	Juneau	AK	SEACCB	153-170	1-8, 4-2, 4-4
Daryl W. Spath	Renton	WA	Individual	137	2-1, 3-2, 3-3
Libby Stortz	Sitka	AK	Individual	181	8-2, 9-1
Tomi Strong	Tenakee	AK	Individual	185	3-2
Rod & Gaile Swope	Juneau	AK	Individual	182	2-1, 3-3, 8-1, 11-1
Eric Syrene, Tania Lewis	Gustavus	AK	Individual	177	2-1, 4-1, 5-1, 8-2, 11-1, 11-4
Marilyn T. Taylor	Tenakee	AK	Individual	187-189	2-1, 3-2, 4-2, 7-4, 8-2, 11-4
Patrick M. Taylor	Tenakee	AK	Individual	189	1-7, 2-1, 3-2, 5-1, 11-1
Tenakee Hot Springs Lodge	Tenakee	AK	THSL	186	3-2, 4-1, 7-4, 11-1
Laurie Thorpe	Juneau	AK	Individual	186-187	2-1, 3-1, 4-1, 5-1, 7-4, 11-4
US Dept. of Army Corps of Engineers	Juneau	AK	USCOE	190-191	0-0
US Environmental Protection Agency	Seattle	WA	USEPA	191-193	4-2, 4-4, 6-1, 11-7
US Office of Environmental Policy	Anchorage	AK	USOEP	193-199	1-1, 1-2, 1-3, 1-7, 1-8, 1-9, 1-10, 1-11, 2-1, 3-1, 4-1, 4-2, 6-1, 6-2, 6-3, 6-4, 6-6, 7-1, 7-2, 8-2, 9-1, 11-1, 11-7, 11-10
US Senator Richard J. Durbin	Wash DC	DC	USSRJD	200	2-1, 5-1
Scott Visscher	Haines	AK	Individual	200	8-2
Caleb Wardlaw	Sitka	AK	Individual	202	1-7, 2-1, 3-1, 3-3, 5-1, 7-1, 7-4, 9-1, 11-1

Commentator	City	State	Organization	Pages	Response to Comments
Pam, T & John Wentzel	Sitka	AK	Individual	207	2-1, 3-1, 9-1
Eric A. Westin	Nashville	TN	Individual	205	3-2
Chris Whitehouse	Tenakee	AK	Individual	203	2-1, 11-1, 11-4
Charles E. Wilber	Sitka	AK	Individual	202	8-2, 9-1
Ester M. Willey	Hillsboro	OR	Individual	205	3-2, 9-1, 11-1
Carl H. Williams	Lakeville	CT	Individual	203	7-4
Al Wilson	Sitka	AK	Individual	201	2-1, 3-1, 6-1, 6-2
Signe Wilson	Sitka	AK	Individual	207	1-7, 2-1, 3-2, 8-1
Florence E. Wintjen	Tivoli	NY	Individual	206	3-2
Deena Wisenbaugh	Tenakee	AK	Individual	204	2-1, 3-2, 7-4
Vicki Wisenbaugh	Tenakee	AK	Individual	208	3-2, 11-6, 11-12
Robert N. Yarborough	Napa	CA	Individual	208	3-2, 11-1
Wayne & Gale York	St. Ignatius	MT	Individual	209	8-2
Richard A. Zagars	Tenakee	AK	Individual	212	2-1
Sheila J. Zagars	Tenakee	AK	Individual	212	2-1
Dave Zeiger, Anke Wagner	Tenakee	AK	Individual	210-211	3-1, 3-2, 5-1, 8-2, 11-4, 11-13
Dianne Zemanek	Tenakee	AK	Individual	209	2-1, 3-3, 6-1, 11-1

Response to Comments

1-1 Consider the amount of old-growth being clearcut and the effects to fragmentation.

Comments were received suggesting that the issue of fragmentation and the loss of connectivity were not adequately addressed in the DEIS. This issue was analyzed in Chapter 3, Biological Diversity and Old Growth of the DEIS (pages 3-5 to 3-12) and expanded upon in the Biodiversity section of the FEIS. This issue also tiers to the 1997 Forest Plan Conservation Biology Strategy. A system of large, medium, and small OGR were designated in the 1997 Forest Plan to maintain contiguous blocks of old-growth forest habitat to support viable and well distributed populations of old-growth associated species and subspecies (Forest Plan 1997, p. 3-81).

Habitat connectivity was addressed to assess whether blocks of contiguous old-growth forest habitat between large and medium reserves and other natural setting Land Use Designations or LUDs (non-development LUDs) were maintained (Forest Plan 1997, p. 4-120). Sixteen percent (11,249 acres) of the Finger Mountain Project Area (72,780 acres) is designated in six small Old-growth Reserves (OGR), one within each Value Comparison Unit (VCU), and 55 percent (6226 acres) of this area is productive old-growth (POG) habitat (FEIS Table 3-1). The project area is bordered by a large OGR to the north that encompasses the entire Kadashan drainage, a medium OGR that encompasses Seal and Long Bays to the northwest, and a congressionally designated LUD II Wilderness Area that contains the Finger River drainage to the southwest. Action alternatives propose to harvest between 1 and 3 percent of POG habitat. Between 97 and 99 percent of the existing POG will be maintained in the project area. Harvest activities will not occur in areas designated as non-development LUDs or OGR.

All applicable 1997 Forest Plan standards and guidelines that are integral parts of the strategy (e.g., riparian management areas, beach fringe protection, landscape connectivity, and the goshawk and marten guidelines) are fully incorporated into the Finger Mountain Timber Sale(s) action alternatives.

Although there will be a slight reduction in POG and coarse canopy habitat, units were designed and selected to maintain dispersal corridors for wildlife in the project area. These include the areas along the shores of Tenakee Inlet and Peril Strait, and between Tenakee Inlet and Peril Strait via the pass between south Crab (VCU 233) and Broad Finger Creek (VCU 246) that were identified as being important habitat corridors for wildlife. During the Finger Mountain planning process, units from the original pool were deleted, deferred, or modified to insure that connectivity between old-growth blocks would be maintained and to reduce fragmentation. All alternatives meet or exceed the standards and guidelines for Landscape Connectivity as stated in the 1997 Forest Plan (p. 4-120). In addition, the desired future condition for Timber Production includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses.

A comment regarding the “spiritual importance of old growth” was received. This issue was not raised during public scoping; therefore, it was not considered in the Draft EIS. However, Executive Order 13007 for Indian Sacred Sites requires federal agencies such as the Forest Service to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sites. No such sites have been identified within the Finger Mountain Timber Sale(s) Project Area by any Alaska Native tribe or individual. In addition, over 48 percent of the project area is in non-development LUDs, as are many of the surrounding LUDs. Many of the acres in these LUDs are covered with large, old trees that are capable of providing areas of spiritual renewal for those who desire it.

1-2 Show old-growth and productive old-growth on the maps.

OGR and POG habitat is displayed on the Existing Condition map in the FEIS.

1-3 Who implements the buffers for bear?

A comment was received stating that the DEIS did not indicate whether streams were surveyed to determine important bear foraging sites. Other comments questioned why 500-foot buffers were not implemented for all Class I streams. These issues were addressed in Chapter 3 of the DEIS under Wildlife, Brown Bear (pages 3-21 to 3-22) and have been expanded upon in this FEIS.

The 1997 Forest Plan states that a 500-foot buffer should be established where, based upon the evaluation, additional protective measures are needed to provide cover among brown bears while feeding, or between brown bears and humans. The plan states that this may especially be important on Class I anadromous fish streams where a large amount of bear feeding activity on salmon occurs. This buffer is in addition to the riparian, beach, and estuary buffers that provide habitat protection.

Internal and Interagency reviews were completed to assess whether additional protective measures were needed to maintain important bear foraging sites. Timber stand and stream survey data and local knowledge of the area were used to review units to assess whether they were located in important bear foraging sites (e.g., waterfalls, areas of concentrated trails, resting sites). None was identified. During project planning, units were located and designed to maintain salmon streams and other key habitats. In addition, State involvement in the project did not reveal any important bear foraging sites. A meeting was held with Phil Mooney and Jack Whitman (ADF&G Habitat and Area Biologists) on February 22, 1999. As a result of the State’s request for additional involvement, another meeting was held on October 3, 2000. The main purpose for the latter meeting was to review and discuss ADF&G’s comments on the Draft EIS, including the process for State involvement in the planning process as shown in the 1997 Forest Plan ROD. ADF&G was also invited to provide additional comments or input to the process. During these reviews, there were no “important brown bear foraging sites” identified within 500 feet of any unit; therefore, no additional buffers were implemented. See response 1-7 for additional information.

1-4 The wildlife covers on the unit cards should list wildlife other than marten.

One respondent stated, "The Wildlife section on the unit cards for the FEIS should describe pertinent wildlife resource information and the measures that will be taken to minimize impacts to those species/habitats." Only wildlife concerns that relate to the layout of the unit are included on the unit cards. For example, marten habitat is shown on the cards so that layout crews know where to leave trees for habitat retention areas. If there were other specific wildlife features or mitigations needed within a unit, they would also be displayed. Because of the proactive approaches used by the planning team, units were carefully designed and located to maintain key habitat components for wildlife and to avoid and/or reduce the impacts on wildlife (see the meeting notes in planning record). Many units were deleted, deferred, or modified, or the harvest prescription for units were changed as a direct result of important wildlife values such as forest connectivity, bear feeding sites, high value deer habitat, and marten habitat. By considering these factors early in the process, many concerns were eliminated or reduced.

1-5 The proposed action does not incorporate alternatives to clearcutting.

Comments were received that recommended the use of harvest methods other than clearcutting. Appendix G of the 1997 Forest Plan describes the silvicultural systems available, a comparison of systems, and the anticipated results of each, along with key site and stand conditions found on the Tongass National Forest. It also identifies the most appropriate systems for given combinations of these factors. As stated in Appendix G, certified silviculturists usually make the site-specific project level selection of silvicultural systems, which are then evaluated through the NEPA process. The determination of whether clearcutting is the optimum method at the project level is based on site-specific factors (e.g., aesthetic, environmental, biological, engineering, and economic considerations). The determination may also be influenced by other concerns, such as the difficulty in protecting residual stands through harvest operations on steep slopes, viable sale economics, the desirability of perpetuating spruce, and other forest health concerns (1997 Forest Plan, p. G-32). Current direction from the 1997 Forest Plan ROD is to use clearcutting where such a practice is determined to be the best system to meet the objectives and requirements of the LUD. The ROD identifies that using even-aged management will occur on 80 percent of lands allocated to timber.

Within the 72,780 acres of the Finger Mountain Project Area, 11,249 acres are designated as Old-growth Habitat. Harvesting is not scheduled within this LUD. The remaining 61,531 acres are in LUDs in which timber harvest is allowed. The desired future condition for the Timber Production LUD includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses. The appropriate 1997 Forest Plan management direction for this LUD is to "[m]anage the area for industrial wood production. Promote conditions favorable for the timber resource and for maximum long term timber production." The selection of the silvicultural system for each unit was based on a thorough review of site-specific environmental and economic factors and a consideration of 1997 Forest Plan management direction. Clearcutting was prescribed as a means to minimize the risk of windthrow, reduce the spread of dwarf mistletoe, promote natural regeneration, improve site productivity through increased soil temperature, minimize road building, and maximize economic returns. The prescriptions that reference clearcutting will not look like past clearcuts on the forest due to the implementation of reserve trees. Harvest systems other than clearcutting are proposed and range from 13 percent of the harvest acres in Alternative B to 89 percent in Alternative F.

1-6 Use the ADF&G research on marten and brown bear.

Comments were received expressing concern that Alaska Department of Fish and Game (ADF&G) research on marten and brown bear was not incorporated into the Finger Mountain EIS. The ADF&G

has conducted extensive marten and brown bear research projects on a broad landscape scale for many years on the Tongass National Forest. In many cases, these research projects were supported, in part, with Federal Aid in Wildlife Restoration Program funds. Due to the broad landscape scale of these research projects, ADF&G research results were considered and included, where appropriate, in the 1997 Forest Plan. For example, ADF&G research results played a role in development of the marten habitat capability model, as well as the standard and guideline for important brown bear foraging site buffers. The Bibliography in the 1997 Forest Plan FEIS includes 130 references to the ADF&G or ADF&G personnel by name. The Finger Mountain EIS is tiered to the 1997 Forest Plan and is consistent with that plan. In addition to the marten and bear research that was referenced in the development of the 1997 Forest Plan, Ben-David et al. 1997; MacDonald and Cook 1999; Deal 2001; Unit 4 Brown Bear Management Team 2000; and personal communication with Jack Whitman, ADF&G, 2003 were referenced in the FEIS.

1-7 The effects analysis to wildlife was inadequate. The analysis of the viability to threatened and endangered species and to management indicator species was inadequate.

Wildlife Viability:

Several comments addressed concerns for wildlife viability including, "The Finger Mountain Timber Sale activities are likely to jeopardize the viability of species that find optimal habitat in interior forests, forests well-developed structures, and forest naturally disturbed by wind and insects." This issue was addressed in the DEIS in the Biodiversity and Old Growth section and was expanded on in the FEIS.

As stated in the DEIS and FEIS, the 1997 Forest Plan contains a comprehensive conservation strategy using a system of OGR designed to provide old-growth habitats in combination with other non-development LUD, to maintain viable populations of native and desired non-native fish and wildlife species and subspecies that may be associated with old-growth forests (Forest Plan 1997, p. 3-76). This strategy, in addition to the implementation of 1997 Forest Plan standards and guidelines, was developed to maintain species viability at the landscape level.

Under the 1997 Forest Plan, project areas are not expected to independently maintain viable populations because of their relatively small size. However, management activities in such areas do need to consider project-level contributions to the Forest-wide strategy. This includes maintaining OGR and other components of the overall strategy such as riparian, beach, estuary, and other species-specific key habitats and connectivity between OGR and non-development LUDs. The application of the 1997 Forest Plan standards and guidelines are integral to protecting and providing habitat to maintain viable fish and wildlife populations. Therefore, the biodiversity issue addressed population viability, old-growth habitat, and habitat connectivity. Although the Biodiversity and Old-growth analysis in Chapter 3 specifically addresses the issue of population viability, it is also important to read the Management Indicator Species and Endemic Terrestrial Wildlife section as well as the section on Threatened, Endangered, Proposed, Petitioned, and Sensitive Species in Chapter 3. This project meets the requirements contained in the 1997 Forest Plan for wildlife viability and therefore will not detract from the Forest-wide viability of any species.

Threatened, Endangered, and Sensitive Species:

One comment stated, "the effects of logging on endangered species will be much greater than the information provided in the EIS." Another comment stated, "any activity which interferes with the recovery of this endangered species [humpback whale] is a violation of law, and such activity could be associated with a logging operation." Other comments suggested that whales do occur in Tenakee Inlet and that this was not addressed in the Finger Mountain EIS. An analysis of the effects of logging activities on threatened and endangered species was addressed in the Threatened, Endangered, Proposed, Petitioned, and Sensitive Species section in Chapter 3 of the FEIS. The section on humpback whales begins with a statement that these whales are found in waters bordering the project area. Waters bordering the project area include marine waters in Tenakee Inlet. The project meets the

Threatened and Endangered Species standards and guidelines for listed species contained in the 1997 Forest Plan. The National Marine Fisheries Service has concurred with our analysis as submitted.

A comment regarding the presence of trumpeter swans in the project area was received. The Department of Interior, U.S. Fish and Wildlife Service (USFWS) was invited to provide feedback to the Biological Evaluation (BE) that was prepared for the Finger Mountain Project. The BE included known information about trumpeter swans, a Forest Service Region 10 sensitive species. USFWS concurred with our BE as submitted. The Draft EIS presented this same information about trumpeter swans on page 3-29. Now that USFWS has informed us through their comment letter that they have evidence that trumpeter swans are present in the project area, this section has been updated to incorporate this new information.

There was a specific comment regarding the effects of proposed activities on the Harlequin duck. The biological evaluation prepared for the Finger Mountain Timber Sale(s) Project and submitted to the USFWS included an analysis of impacts on Harlequin ducks.

Other Wildlife Species:

There were some specific comments regarding lack of analysis for subspecies of the tundra vole, ermine, Keen's mouse and Keen's myotis as endemic species. An analysis of endemic species was addressed in Chapter 3 of the DEIS, under Wildlife, Endemic Terrestrial Mammals (page 3-14). Although surveys were not conducted specifically for this project, numerous small mammal surveys have been completed on Chichagof Island. Surveys did not identify any rare or endemic terrestrial mammal populations on Chichagof Island. The 1997 Forest Plan does not require analysis of subspecies as endemics. Keen's mouse and the ermine occur (at a minimum) throughout Southeast Alaska. The tundra vole has a large range on the mainland as well as Baranof and Chichagof Island. None of these species is endemic to Chichagof Island. For this reason, they were not analyzed as endemic species for this project. Additionally, Keen's myotis is not endemic to Chichagof Island, as it has been found in other areas of Southeast Alaska. Due to the limited knowledge of the species, it is considered a species of concern and has been analyzed in the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 in this FEIS.

There were some specific comments regarding the analysis for brown creeper including that the "...DEIS needs to reveal how many acres of forest greater than 30,000 board feet per acre will be remaining." The DEIS analysis (Chapter 3, p. 3-22) for brown creepers is tiered to the analysis in the 1997 Forest Plan FEIS (USDA 1997, pp. 3-364 and 365). The FEIS includes additional analyses for this and other cavity nesting bird species.

A comment regarding the effect of proposed activities to insects, spiders, or other terrestrial invertebrates and rare fungus or lichens was received. These species were not directly addressed in the analysis for the following reasons:

- 1) any effects to these or other invertebrates would be insignificant;
- 2) none of the potential effects from this project would cause a trend toward or actually cause these or other invertebrates to become listed under the Endangered Species Act;
- 3) there are currently no listed Threatened, Endangered, or Sensitive terrestrial invertebrate species in Alaska;
- 4) planning regulations (36 CFR Part 219.19) require that fish and wildlife habitats be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area;
- 5) there is no mention, other than in broad terms of biodiversity, of terrestrial invertebrate species; and
- 6) there is no category of "rare" plants and therefore no mention of "rare fungus or lichens."

Roads and Brown Bears:

There was a specific comment regarding the effects of roads on brown bears. The effect of roads on brown bears was included in the Finger Mountain DEIS (Chapter 3, page 3-22) and in the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 of this FEIS. Road Management Objectives (Appendix C) include mitigation measures to either discourage or eliminate the use of motorized vehicles, including ATVs, on project area roads. Additionally, no more than 13 miles of road would be left open under any of the proposed alternatives, with an open road density of 0.3 miles per square mile.

1-8 The stream buffers are inadequate.

Several comments expressed concern regarding the adequacy of planned stream buffers, lack of protection from designated 100 ft. buffer zones, and the risk of blowdown in buffer zones, thereby leaving streams and rivers without protection. The 1997 Forest Plan standards and guidelines require that stream buffers be designed with a reasonable assurance of being windfirm. As stated in the Finger Mountain DEIS, Chapter 3 in the Water, Soil, and Fish analysis (pp. 3-31 to 3-48), field surveys were completed in the project area to determine the location, size, and relative condition of streams and to determine the relative wind disturbance probability in areas within and adjacent to proposed harvest units. Although most high-risk areas were avoided, some stream riparian areas lie within high wind disturbance probability areas. As stated in the Finger Mountain DEIS, silvicultural prescriptions for these units emphasize leaving additional windfirm trees beyond the stream buffers to reduce windthrow within the buffers. These windfirm management zones are depicted on the unit card maps, along with a narrative. All Class I, II, and III streams within the project area will have the appropriate process group buffer as directed in 1997 Forest Plan standards and guidelines. Many of these stream process group buffers exceed 100 ft. in width (see 1997 Forest Plan pp. 4-53 to 4-73 for more details on stream buffer requirements). Avoidance of high-risk areas and adherence to 1997 Forest Plan Best Management Practices (BMPs) and standards and guidelines, including implementation of stream buffers and additional wind management zones to protect those buffers, will protect water quality and fish habitat in the project area.

1-9 The numbers for deer habitat are incorrect, and measures for marten mitigation are inadequate.

The interagency model (Suring and others 1992) developed to evaluate potential winter habitat capability was updated during the Forest Plan revision. The model was developed as a tool to assess the effects of action alternatives compared to past, present (No-Action Alternative), and future habitat suitability and capability of the project area. The model calculates habitat suitability indices (HSIs) based on timber volume strata, aspect, elevation, and typical snowfall. The HSI values are used to calculate and compare habitat capability and to estimate changes in habitat capability that result from timber harvest. An HSI of 1.0 represents a habitat capability of 100 deer per square mile; this is the multiplier used to convert HSI values into habitat capability numbers. Habitat capability is the theoretical number of deer that particular habitat types can be expected to support. It does not reflect actual known deer numbers but is used only for comparing potential impacts of action alternatives. The model estimates habitat capability based on the condition of previously harvested stands and stands proposed for harvest (e.g., stand initiation or stem exclusion) compared to the habitat capability that existed prior to large-scale timber harvest. Low-impact harvest prescriptions such as individual tree selection where only 25 percent of the basal area is removed were assumed to have less of an impact on deer habitat than clearcuts because partial cutting maintains a diversity of plant communities in the understory and cover in the overstory (Deal 2001, p. 2076). All other harvest prescriptions were counted as clearcut by the model. This gives the most honest representation of the effects of alternatives on deer. If all harvest methods were treated the same as clearcut, the model would overstate the effect on deer habitat and would not be useful in making a decision on this project.

A comment was made that “the project area is not a meaningful ecological unit and should not be used as the base of reference for this analysis.” The project area is the location on the ground where the effects of the proposed action, if implemented, are developed and analyzed. Direct, indirect, and cumulative effects are also considered outside the project area if effects are generated when implementing the proposed action. Examples include the analysis of high quality deer habitat based on the Wildlife Analysis Areas (WAA). This analysis was also calculated by VCU and is available in the project planning record.

There is no requirement that “ecological units” must be used as the base of reference for environmental analysis. Because ecological units are usually much larger than individual project areas, we would also run the risk of diluting effects by spreading them out over a much larger area.

The latest version of the marten model was used as specified in the 1997 Forest Plan. As discussed in Chapter 3 of this FEIS, this project fully complies with the marten standards and guidelines contained in the 1997 Forest Plan. Additional information about marten and integrating marten habitat requirements into the harvest prescriptions is located in the project planning record.

1-10 The wind management zones in units 1680, 1450, and 1973 are not correct.

Blowdown is always a risk in the timber types of Southeast Alaska. Our assessment was based on windthrow found within the stand, the size and type of vegetation found in the stand, the topography relative to prevailing storm winds, and a wind analysis completed as part of the 1999 Southeast Chichagof Landscape Analysis. We assessed this risk during the planning phase then designed unit configurations and silvicultural prescriptions to minimize future windthrow in high-risk blowdown areas.

Stand management tools such as edge feathering, layered edges, and placing unit boundaries against more windfirm timber types are used as much as is practical. Field reviews have been completed for all units, including those in question, and it is our professional judgment that these units have low to moderate windthrow hazard. Specific mitigation needs are recorded in the unit cards and will be implemented during layout to increase the probability that the riparian buffer will remain windfirm.

1-11 Continue surveys for goshawks; if goshawks are found, modify units.

There was a comment about continuing surveys for goshawks. If, during layout, any goshawk nests are found, the unit will be modified to meet 1997 Forest Plan standards and guidelines.

2-1 Consider the effects on subsistence.

Comments were received expressing concern that the effects of timber management activities on subsistence resources were not adequately considered. One comment stated, “the areas in the proposed Finger Mountain Sale are important for subsistence hunting and fishing and the EIS and the sale will be detrimental to these important uses.” The subsistence effects analysis may be found in Chapter 3 of the Final EIS. The Finger Mountain subsistence analysis was based on information and analysis contained in the 1997 Forest Plan FEIS, Chapter 3 (sections on Subsistence and Communities), Appendix H, and the Deer Harvest Map in the 1997 Forest Plan map packet. This analysis also relied on information contained in the Tongass Resource Use Cooperative Study (TRUCS) (ADF&G, Division of Subsistence, 1988), which included local knowledge of subsistence resource use and abundance.

Action alternatives would not directly, indirectly, or cumulatively present a significant possibility of a significant restriction on subsistence use of any resources in the project area. With the application of the 1997 Forest Plan beach, estuary, and riparian standards and guidelines, no significant adverse effects on fisheries or marine mammal or invertebrate species are anticipated under any alternative (see the Water, Soil, and Fish section of this chapter). There are no anticipated significant adverse effects

Appendix D

for wildlife species because of the implementation of small OGR (part of the 1997 Forest Plan habitat conservation strategy) and species-specific standards and guidelines for wildlife species (see the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3). In addition, during the planning process, units proposed for harvest in action alternatives were selected and designed to preserve important fish and wildlife habitats, to preserve the integrity of old-growth habitat, and to maintain POG habitat and connectivity. This determination for deer is also based on the potential resource effects on the abundance and distribution of deer, access to deer, and competition for deer. Although there would be a reduction in deer habitat, results of deer pellet surveys conducted jointly by ADF&G and the Forest Service suggest that deer numbers on Chichagof Island and in the vicinity of the Finger Mountain Project Area have remained stable since surveys began in 1981 (Kirchoff and White 2002). In addition, the Forest Plan designated the Kadashan and Trap bay watersheds as legislated LUD II areas and the area south of Seal Bay as Old-growth Habitat Reserve because of their high value for subsistence use to Tenakee Springs residents (Forest Plan FEIS, p. 3-658 and 3-659).

The 1997 Forest Plan cumulative effects analysis of resource developments on subsistence resources (FEIS, Chapter 3, "Subsistence") states that implementation of the 1997 Forest Plan may result in a significant restriction to subsistence use of deer due to the potential effects of projects on the abundance and distribution of deer and competition for deer (Forest Plan ROD 1997, p. 36). Therefore, a public ANILCA 810 Subsistence Hearing was held in Tenakee Springs on May 15, 2003 to provide an opportunity for subsistence users to offer testimony about subsistence issues in the Finger Mountain Project Area. The subsistence analysis in the FEIS was updated to reflect the results of this public meeting.

Comments were received regarding the effects of proposed activities on other marine species including herring, herring spawn, crab, and scallops. No marine waters affected by the proposed project are currently identified for Federal subsistence management jurisdiction. Subsistence harvest of these food items is managed by the ADF&G, Division of Subsistence.

A comment was received suggesting a change to subsistence regulations. For the Federal Subsistence Board (FSB) to consider a change in the regulations for subsistence management, a Proposal Form should be submitted to the FSB. Copies of the forms and assistance in completing it are available from any federal resource management agency.

3-1 Confine logging to the existing road system. Provide a map of Roadless Areas.

Comments were received requesting that logging be confined to the existing road system and that no new roads be constructed. Chapter 2 of the Finger Mountain EIS describes the alternative development process. Five alternatives were considered in detail. The activities proposed for the Finger Mountain Project, including the construction of roads, are appropriate for the LUDs included in the project area. A Roads Analysis Process was conducted for South Chichagof Island Roads Analysis Area during the winter of 2001/02. Portions of proposed activities within Timber Production LUDs are within current Inventoried Roadless Areas and other unroaded areas. For Timber Production, the desired future condition includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management and public uses. An effort was made during alternative development to minimize road construction. Proposed new road construction associated with the action alternatives represents extensions of existing roads. Alternative F proposes no new permanent roads; timber harvest would be confined to the existing road system. Alternative H predominately harvests off the existing road system but needs to utilize temporary roads for access. While logging only from existing roads is certainly possible and was considered, other factors come into play in making a final decision. Taking available timber only from an existing road system may prohibit future entries by making it cost-prohibitive to extend roads without contributing volume. We chose the most economical method of harvest that would meet resource objectives for each alternative, taking into consideration future management plans.

Comments concerning the roadless issue were received. An updated discussion of Roadless Areas is included in the Roadless Areas section of Chapter 3 in this FEIS. A map has been added to the FEIS to show Roadless Areas.

3-2 Road construction, log transfer facility (LTF) construction, and timber harvest will cause too much noise and/or will adversely affect the visual quality of the area.

Comments included a concern about the amount of noise resulting from harvest activities. A specific comment stated “the quiet of Tenakee Inlet would be shattered by noise pollution if logging is done here.” The level of noise resulting from harvest activities is addressed in the FEIS in Chapter 3, under Recreation and Social Values and Economics, and was considered as one of the factors in the final selection of an alternative. Any noise associated with harvest activities would be of short duration (fewer than six months/year) and would occur only for the length of the timber sale (1 to 3 years). In all action alternatives, the direct effect of noise on Tenakee Springs would probably be minimal due to the distance of the timber sale from the town (five miles to nearest activity).

Several comments addressed concerns about the effects that harvested units will have on the scenic quality of the project area. One comment stated, “One of the chief concerns of local residents is the degradation of scenic resources caused by visible logging activity.” The issue of scenery was analyzed in the Finger Mountain EIS, Chapter 3, under Recreation, Scenery and Transportation and Facility and tiers to the 1997 Forest Plan. The 1997 Forest Plan established Visual Quality Objectives (VQOs) for all areas within the project area. All proposed harvest units, roads, and LTFs were designed to meet VQOs and conform to the standards and guidelines established in the 1997 Forest Plan (1997, pp. 4-75 through 4-82). As stated in the Finger Mountain EIS, the community of Tenakee Springs and the areas of Tenakee Inlet, Crab Bay, and Saltery Bay were given special consideration in this analysis. In response to public concerns, some initially proposed harvest units were moved further up the drainage to reduce the noise and visual effects associated with timber harvest. In addition, harvest in Saltery Bay was deferred. In Alternative F, units 1950H, 1951H, 1952H, 1970, 1971, 1973, 1976, 1977, 2021, 2030, 2030H, 2040A, 2040B, 6047, 6054, 6055H, 1802, 1804, and 1805H were modified to address concerns that were raised over the impacts to the scenic resource. This included the use of partial harvest technique such as 25% or 50% individual tree selection in 37 percent of the harvest units. Ten percent of harvest units in Alternative B were proposed as partial harvests. Where feasible, roads and landings with a visual quality objective of modification were located to minimize or eliminate their visibility. Additional mitigation measures are included in the road cards for minimizing impacts along the following roads: 7560, 75602, 75603, 7561, 75651, 7568, 7605, and 76051.

A comment requested that the project should include timber harvest in areas designated as Modified Landscape in the 1997 Forest Plan and that the Forest Service should attempt to achieve VQOs in ways that have the least impact on the productive capabilities of those areas. The 1997 Forest Plan does permit harvest in the Modified Landscape LUD, and the intent of an integrated silvicultural harvest prescription is to balance the needs for extractive use and productive capabilities with aesthetic impacts. A comment suggested that the Forest Service include “non-significant Forest Plan amendments that change Modified Landscape LUDs to Timber Production LUDs where site-specific evaluations indicate the timber stands are not visible and Modified Landscape LUD boundaries have been mislocated.” The definition of Modified Landscape establishes that where an area is unseen that a VQO of Maximum Modification be applied. This is the same VQO permitted within Timber Production LUDs. Not all areas/LUD boundaries could be precisely mapped at the forest planning scale. Travel routes as approved in the 1997 Forest Plan were mapped and simulations were completed to review LUD boundaries designated to protect visuals. Results of the simulations were reviewed for accuracy to assist in determining whether the placement of the LUD boundary met the intent of the designation in the 1997 Forest Plan for visuals.

Comments were received requesting information on the effects of noise on marine mammals. This issue is addressed in the Threatened, Endangered, Proposed, Petitioned, and Sensitive Species Section of Chapter 3 of this FEIS in terms of the effects of noise producing LTFs and associated log raft/barge towing activities, along with recreational boating on humpback whales. Potential effects of noise on humpback whales and Steller sea lions were mitigated by requiring all activities to be conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching marine mammals.

Effects of noise on wildlife species in general is discussed in the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 in this FEIS in terms of the effects of helicopter operations on wildlife. Effects were determined to be negligible over the long term.

3-3 The project will adversely affect recreation use, resulting in fewer tourism dollars.

Comments stated a concern with the effect of harvest activities on recreation use in the area of Tenakee Springs. Recreation use is discussed in Chapter 3 of the FEIS under Recreation. This section describes the recreation opportunities in the project area and effects of the action alternatives on these opportunities. The analysis of recreation opportunity and use addressed the following concerns: impacts to recreation resources and opportunities, related impacts to tourism, reductions in subsistence and sport hunting, reductions in salt and freshwater fishing, and competition from logging camp residents. All action alternatives will affect recreation use and tourism dollars generated. The basis for this analysis is the Recreation Resources Inventory and Effects Analysis Report on file in the planning record. Refer to Issue 7-4 for further discussion of this issue.

4-1 Require the use of a barge rather than allowing logs to be dumped into the water.

Comments were received that "oppose the use of log transfer facilities which place logs in the water." Another respondent stated that the Forest Service should "prohibit the dumping of logs in the waters. Instead, the Forest Service should require that all logs from the sale be placed on barges" instead of using a LTF. The use of LTFs is addressed in the FEIS in Chapter 3 under Transportation and Facilities. The use of a barge at the Inbetween LTF did not meet citing guidelines for water depth and site productivity. That site is very shallow (2.4 meters deep, 50 meters from shore) and not deep enough to use barges. Alternative B proposes use of a barge facility at the Crab Bay LTF.

4-2 Give more data on effects of LTF bark accumulation and other effects on marine life.

Additions were made to the FEIS under the Transportation and Facilities section of Chapter 3 to better describe the marine environment. Information from dive reports is found in the planning record. Information on the effects of the LTF on marine life and updated mitigation measures are described below under response 6-1. Based on recommendations from ADF&G, LTF restrictions were revised in the FEIS and now read, "Due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use from April 15 to June 15 each year) unless the Forest Service and ADF&G decide otherwise. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) is responsible for any and all clean-up costs and civil damages resulting from the negligent spill of any hazardous material, including fuel."

4-3 The proposed LTF at Inbetween should be at the same site. Comments on Crab Bay LTF Permit.

It was suggested that the LTF at Inbetween should not be moved to a new site. Others requested an explanation for why the LTF site had been relocated. The use of LTFs was addressed in the EIS in Chapter 3 under Transportation and Facilities. The National Marine Fisheries and the U.S. Fish and Wildlife Service dove on the proposed LTF sites at Inbetween and Crab Bay. The report made by the

divers (found in the planning record) recommends that the LTF at Inbetween be moved to the site reflected in the EIS, as this site meets the LTF citing guidelines better than the previous site.

A comment about the Crab Bay LTF permit was noted. Permits are pending for the Crab Bay LTF, including a tideland permit.

A respondent requested more information on the design of the LTF at Crab Bay. This information has been included in the FEIS.

One respondent suggested that LTFs and logging camps will generate substantial marine and air traffic in Tenakee Inlet and that boats and planes will disrupt sea lions and whales in the inlet. With the removal of the existing logging camp at Corner Bay, all alternatives were modified to include use of a floating camp. The effects of LTFs and boats on marine mammals are addressed in the Threatened, Endangered, Proposed, Petitioned, and Sensitive Species Section of Chapter 3 of this FEIS. Effects of air traffic and logging camps on wildlife species are addressed in the Management Indicator Species and Endemic Terrestrial Mammals section of Chapter 3 of this FEIS.

4-4 Will the interim rules for Essential Fish Habitat of the Magnuson-Stevens Act be applied?

Essential Fish Habitat (EFH) was not addressed in the DEIS because the document was produced before inclusion of an EFH Assessment became a requirement of NEPA documents. An EFH Assessment has been added to the Water, Soil, and Fish section of Chapter 3 of the FEIS. Comments by the Environmental Protection Agency (EPA) and the Department of the Interior (DOI) expressed concern regarding the need for the EIS to include an assessment of the potential project impacts to EFH as required by NEPA and the applicable provisions of the Magnuson-Stevens Act. The Magnuson-Stevens Fishery Conservation and Management Act of 1996 and the Department of Commerce's Essential Fish Habitat (EFH) consultation regulations include a mandate that Federal agencies must consult with the Secretary of Commerce on all activities, or proposed activities, that may adversely affect EFH. The National Marine Fisheries Service (NMFS) is the primary agency to be consulted for concurrence and conservation recommendations. NMFS (Cindy Hartman) was contacted in January 2000 by Bill Lorenz to discuss EFH in reference to the Finger Mountain Project. NMFS concurred with our plan to document the EFH Assessment and findings in the Decision Notice.

5-1 Consider a wider range of alternatives, including the CCC Alternative, to include viable options to provide economic opportunities for small-scale operators.

Comments were received requesting that a wider range of alternatives, including a specific alternative (CCC Alternative), be considered in more detail. In the development of an environmental impact statement (EIS), agencies must consider reasonable alternatives that respond to the purpose and need of the proposal and address significant issues. Chapter 2 of the FEIS describes nine alternatives considered in the Finger Mountain Timber Sale(s) including: the No-Action alternative, action Alternatives B, C, D, E, F, G, H, and the Chichagof Conservation Council (CCC) Alternative. Alternatives C, E, and G were eliminated from detailed study because the 1999 Forest Plan ROD changed LUDs, and the alternatives no longer complied with that plan. The areas that had been changed (VCUs 232 and 246) are now back under the Timber Management LUD but have been deferred from harvest consideration at this time. The CCC Alternative was also eliminated from detailed study because some aspects of the proposal were not feasible and some of the issues were addressed by other alternatives. However, some respondents stated that these issues were not adequately addressed. The FEIS has been clarified to better address these concerns.

The CCC Alternative was designed to eliminate permanent road construction, minimize effects to wildlife, emphasize alternative logging practices, and preclude the construction of LTFs. The CCC

Alternative was also designed for small sales, from which the operator would perform as much on-site secondary processing as possible. Without larger sales to carry the cost of infrastructure, small sale(s) are not viable. This alternative incurs roads costs (reconstruction of existing and temporary roads) of \$133/ccf without factoring in logging and transportation costs. These road costs increase the risk of the offering not selling. Timber sale offerings with road costs in this range have a very high risk of not selling. The proposal calls for downhill cable yarding on specific units to leave an average of 50 percent retention, an activity that is not possible in those units.

To accomplish the high level of retention desired to meet the objectives stated in the CCC Alternative (e.g., wildlife habitat, scenery) would require the use of a helicopter or a mid- or upper-slope road. Helicopter yarding is not economically feasible on small-volume sales, nor does it provide small-sale opportunities. Placing roads at the bottoms of units does not allow for a high percent of retention. Because logs are difficult to control when cabled downhill, they roll into retained trees, causing physical damage and, subsequently, disease. The resulting stand is usually unhealthy, and the retention level is far less than desired. Building more roads to access the upper end of the units to permit thinning options would not minimize road construction and would, in most cases, cause more resource damage by placing additional roads on steep slopes.

Some respondents requested a much smaller volume offering, such as 4 million board feet of timber (MMBF). Alternative H was developed and analyzed in the Final EIS to respond to concern about small sales. This alternative proposes a sale offering of the smallest size possible that could still carry needed infrastructure. It relies on clearcutting to achieve lower logging costs thereby reducing the risk of not selling.

Volume that could be sold as small sales is identified in the ROD. Any one of the alternatives would permit small sales; new roads would be built, existing roads now closed would be repaired, and an LTF would be constructed, thus providing infrastructure for future sales. Moreover, several units would be excluded from the larger sale and offered after the roads are built. This is a common practice, although it is dependent on the demand for small sales and market conditions at the time of offer.

The Forest Service provides wood for public consumption. A document titled, "Evaluating the Demand for Tongass Timber" includes an analysis of market demand completed for the 1997 Forest Plan (Morse, USDA Forest Service, R10, 1998). The Forest Service is committed to meeting that demand. One of our goals is to provide a range of sale sizes to potential timber purchasers. Infrastructure construction in large sales provides roads and LTFs for small sales that may not be able to bear those costs. By setting aside specific units to be sold as small sales, we are providing opportunities for small-scale operators while maintaining the ability to meet market demand within the Tongass. Appendix A of the FEIS gives a detailed explanation of the rationale for a specific timber sale project and the sale's importance to the multi-year timber program on the Tongass National Forest.

6-1 Consider the effects on water quality and fish habitat, especially mitigation for adequate fish passage.

Effects to water quality, stream flow, stream nutrients and fish habitat: Several comments expressed concern that some or all of the proposed alternatives would allow too many clearcuts and roads and would degrade and adversely impact water quality, stream flow, stream nutrients and fish habitat. As explained in the Water, Soil, and Fish section of Chapter 3 of the FEIS, we will comply with the 1997 Forest Plan by adhering to BMPs and standards and guidelines, which are designed to protect water quality and fish habitat.

The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, which includes a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, the State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FS

Handbook 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the 1997 Forest Plan.

All alternatives meet or exceed the standards and guidelines for maintaining water quality and fish habitat as stated in the 1997 Forest Plan (pp. 4-8 to 4-12; 4-53 to 4-73; 4-83 to 4-85; 4-104 to 4-111). These standards and guidelines were cooperatively produced and agreed to by state and federal agencies, forest managers and the scientific community. These issues are further discussed in the Water, Soil, and Fish Section of Chapter 3 of the FEIS. Additional detail is located in the project planning record.

Field surveys were completed in the project area to determine the location, size, and relative condition of streams. As mentioned in the Finger Mountain EIS, there is an overall abundance of healthy riparian and floodplain areas and streams in the planning area. Information from field surveys along with existing stream data and information from the Southeast Chichagof Landscape Analysis was used in the design of harvest units and roads. Units and roads were located to avoid or minimize potential impacts to fish streams and associated riparian areas. Avoidance of high-risk areas and adherence to 1997 Forest Plan BMPs and standards and guidelines (including stream buffers and additional wind management zones to protect those buffers) will protect water quality and fish habitat in the project area. Because roads will generally be located away from major sediment sources, riparian areas, and wetlands, potential impacts to water quality and fish habitat will be limited. Additionally, no more than 14 miles of road would be left open under any of the proposed alternatives. Closing roads after harvest minimizes future maintenance needs and potential long-term impacts to water quality and fisheries. These measures will further reduce risk to water quality and fish habitat. The state has concurred that this project meets or exceeds requirements for clean water and the Alaska Coastal Management Plan (ACMP).

Road Maintenance:

Several comments expressed concern with a lack of past road maintenance and associated impacts to streams and fish habitat in the project area. Also, several comments stated that if Alternative F is selected, and harvesting is deferred in the Inbetween Creek watershed, then the existing road system in this drainage should either be effectively closed or inventoried, as the DEIS (p. 3-46) describes, with the "removal or repair of structures or road segments identified as resource concerns." The Tongass National Forest is working to complete detailed surveys of all Forest roads within the next 3 years. This is all part of a national emphasis to identify and either restore or close roads with existing resource concerns and impacts. In the past three years, the Sitka Ranger District has surveyed most of the district roads, including the roads associated with the False Island, Corner Bay, and Indian River (Tenakee) systems. During this time, work has also been completed on these road systems to close unused roads (i.e., remove drainage structures, install waterbars, and stabilize the land) and to restore fish passage along open roads at drainage pipes that have failed or that were improperly installed. We finished surveying the Inbetween road system in the summer of 2001. Road survey information is being used to prioritize and schedule necessary road maintenance and closure work and to redesign drainage structures. Additionally, standards and guidelines for fish passage structures on the Tongass National Forest have recently been updated in cooperation with ADF&G to help insure successful fish passage at all fish stream crossing sites.

Monitoring:

One respondent expressed concern about "...maintaining a continuous program for research, monitoring, and assessment of impacts of land-use activities on fish habitat. This DEIS has failed to meet these standards by not adequately addressing forest succession, evapotranspiration and the long term effects on fisheries resources." The respondent further states, "there is little scientific data available supporting the belief that current BMPs and S&Gs adequately protect anadromous fish habitat." BMPs and other 1997 Forest Plan standards and guidelines are monitored to determine whether they are being implemented and, once implemented, whether they are effective in achieving their goals and objectives (see the Monitoring Plan specified in Chapter 6 of the 1997 Forest Plan).

The results of this monitoring determine whether changes in management direction are necessary. The U.S. Army Corps of Engineers (COE) is a participating agency in the Interagency Monitoring and Evaluation Group. This group identifies the BMPs and other standards and guidelines that are monitored each year and develops the protocols used for the Annual Monitoring and Evaluation Report. If it is found that these standards and guidelines are not effective, they are reviewed and updated. For individual projects such as this one, the latest version of BMPs and standards and guidelines are applied.

Scientific Credibility of Literature Cited:

One respondent expressed disagreement with the following statement in the DEIS (Chapter 3, p. 34): "the risk of significant cumulative flow reduction is very low in all watersheds under all alternatives, as a result of stringent riparian protection, low road density, and low cumulative timber harvest. Harvest of key watersheds will be well below the 20 percent of concern identified in the 1997 Forest Plan for risk of cumulative watershed effects." Others expressed concern with the long-term effects of the proposed harvest activity on nutrients in aquatic systems in the planning area. These comments challenge the scientific credibility of literature cited and data contained within the 1997 Forest Plan. This is a Forest Plan issue and is outside of the scope of this project.

One respondent referred to errors in a paper cited in the EIS by stating, "the Paustian paper and all the conclusions about differences in suspended sediment before and after logging on Indian River are incorrect." The suspended sediment data from the Indian River monitoring properly segregates sediment discharge data into pre-activity and post-activity sampling periods. Comparison of sediment concentration versus discharge regression relationships shows no appreciable change between the two sampling periods. There is no reason to believe that additional statistical testing would lead to another conclusion. The respondent's suggestion to selectively exclude parts of the sample record would be counter to standard analytical procedures. More large runoff events did occur during the pre-activity sample period; however, these storms were not of sufficient magnitude to change natural sediment transport dynamics of the system. The sediment-discharge relationships for low to moderate size runoff events did not change between the two sampling periods. This conclusion is supported by the level of similarity in the slopes and y-intercepts produced by the regression equations developed for each sample period.

Lack of Research:

Comments were received noting the lack of studies evaluating the effects of timber harvest on water yield during low-flow periods. Recently, the US Geologic Survey Juneau office completed one such analysis on the Stanley Creek watershed on Prince of Wales Island. The analysis used the "Indicators of Hydrologic Alteration" (IHA) software developed by the Nature Conservancy, USGS surface-water data analysis programs, a comparison to a nearby undisturbed watershed with similar periods of flow record, and an examination of the precipitation regime. Timeframes considered were the pre-harvest period (1965-1970), post-harvest period (1971-1981) and forest re-growth period (1990-1998). The two-flow-analysis programs agreed in showing a slight decrease in minimum flows from the pre-harvest to the re-growth period (11 cubic feet per second (cfs) and 9.6 cfs respectively for the 10-year and 7-day low flow) in Stanley Creek. However, in comparing actual flow data records of Stanley Creek to a nearby, undisturbed watershed (Old Tom Creek), no difference in low flows could be determined. This suggests that changes in low flow from the pre-harvest to re-growth period in Stanley Creek may be due to climatic influences. The analysis notes that the pre-harvest data was entirely within the negative Pacific Decadal Oscillation (PDO) in which winter precipitation is more likely to be snow leading to prolonged spring runoff and higher spring and summer flows. In contrast, the post-harvest and re-growth periods are entirely within a positive PDO in which winter precipitation is more likely to be rain and is not available to prolong spring/summer snowmelt, thus increasing the probability of low summer flows. The analysis suggests that a paired watershed study would be preferable in assessing pre- versus post-harvest conditions. A major component of the overall Tongass riparian and aquatic monitoring strategy is the establishment of paired case study watersheds.

Effects to Herring and Crab:

Comments were received regarding the effects of proposed activities to herring, particularly spawning habitat. One respondent stated, "Almost every form of wildlife living in or passing through the Inlet depends upon this local herring population." Other comments addressed concerns with the timing of activities. Effects of the proposed activity on herring were analyzed in the Transportation and Facilities Section of Chapter 3 in the FEIS.

Herring are likely to occur and spawn in Crab Bay. To mitigate effects of the proposed activity to herring, the Final EIS included the following mitigation: if herring spawn within 0.5 miles of the LTF, timing restrictions on reconstruction and use of the LTF would extend to June 15, or approximately four weeks after the occurrence of spawn, to allow the eggs to hatch and mobilize. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. Based on recommendations from the Alaska Department of Fish and Game (ADF&G), this section was revised in the FEIS. It now reads, "due to the high likelihood that herring will spawn in and near Crab Bay, reconstruction and operation of the LTF will be restricted (i.e., no use from April 15 to June 15 each year) unless the Forest Service and ADF&G decide otherwise. Fuel transfers would be allowed during this period to maintain inland heavy equipment operations. The contractor(s) is responsible for any and all clean-up costs and civil damages resulting from the negligent spill of any hazardous material, including fuel."

A comment was received regarding subsistence crabbing. No marine waters, including Tenakee Inlet, are currently identified for Federal subsistence management jurisdiction. Therefore, this issue is outside the scope of this EIS. Crab subsistence harvest is managed by the ADF&G, Division of Subsistence.

Other:

Concerns were also raised that the DEIS did not "provide site-specific information on the bathymetry of the sites, flushing capabilities, current biological productivity and species diversity at the sites, or the amount and extent of bark deposition from previous log dumping." Dive reports include this information and are located in the Planning Record.

6-2 Why is harvest being proposed on high-hazard soils, especially MM14? What are the mitigation measures? How many acres will be harvested from high-hazard soil?

Several comments noted that the Draft Environmental Impact Statement (DEIS) lumps high and extreme hazard soils (MMHAZ 3 and 4) together. One respondent stated that the EIS refers to "high hazard soils" but does not clearly display what is included in this category. The respondent further stated that areas mapped as MMHAZ 4 should not be included within harvest units. Another respondent stated, "It appears that harvesting is proposed on areas of MM14 (very high mass movement index) soils, which the 1997 Forest Plan has designated as unsuitable and not available for timber production." This issue was addressed in the DEIS, Chapter 3 (pp. 3-31 to 3-48). The 1997 Forest Plan states that areas with slopes of 72% or more (which roughly correspond to areas mapped as MMHAZ 4) are removed from the timber base at the Forest Plan level. However, at the project level, these areas can be approved for harvest by a District Ranger or Forest Supervisor based on field review. This field review can occur during the planning or implementation phase of a project, according to the Tongass Plan Implementation Team (TPIT). The footnote to Tables 3-18 correctly indicates that "high hazard soils" include both MMHAZ 3 and MMHAZ 4 soils. As explained in the Water, Soil, and Fish Section of Chapter 3 of the FEIS, areas of MMHAZ 4 are included in some harvest units for the following reasons: (1) they were mapped incorrectly and after field review were determined to be MMHAZ 3, or (2) they are steep, but after field review, determined to be stable and not a significant threat to downstream beneficial uses. We do not discuss the analysis of each unit within the FEIS. These analyses remain in the planning record. As described in the EIS, approximately 43 acres of the area mapped as extreme hazard remain in the unit pool. In units 1731, 1770, and 1853, small areas with slopes greater than 72% occur; they total no more than three acres.

These units are planned for harvest in Alternative B. The remaining 40 acres occur in three helicopter units (1805H, 1813H, and 1815H), which are planned for harvest in Alternatives F and D. In these units, we have taken a number of steps to minimize the risk of slope failure, which include deleting the steepest areas, prescribing harvest of one half or fewer of the trees, and requiring full suspension (helicopter) logging. Specific layout concerns for soils are identified in unit cards.

6-3 Do not harvest on slopes over 72 percent.

Comments expressed concern that the areas with greater than 72 percent slopes were not displayed on the unit cards. We have decided not to add this information because it would be misleading. The slope information available in our geographic information system (GIS) is only accurate to 2-4 acre blocks on the ground and is useful for overall planning area analysis for helping to prioritize fieldwork. Displaying slope information within individual units that are as small as 5 acres would be misleading. We did not enter the more detailed information collected during field review into our GIS and therefore cannot display it. However, the Steep Slope Analysis contained in the planning record lists the units containing slopes steeper than 72 percent and describes the location of those slopes within the units. The slopes greater than 72 percent that are identified in any proposed action are stable and do not threaten a stream.

6-4 Provide data that are more specific on the road and unit cards for stream crossings, unstable slopes, and soil protection.

Stream Crossings:

In reference to the road cards, the letters from ADEC and ADF&G [and included in the comments from the Division of Governmental Coordination (DGC)] state that "several pieces of important information are lacking on most of the cards. This includes the type of structure to be used, the incision depth, channel bed width, gradient, and substrate at each crossing site, and fish passage requirements, timing dates, and the site-specific BMPs that will be implemented (the cards vary in degree to which this information is provided.)...We can only assume that this is due to a lack of field review of each crossing site, as several of the cards indicate that additional fisheries and hydrology review is necessary prior to determining the types of crossing structures to be used." The comments from DGC and others also recommend the use of bridges rather than culverts at a number of identified crossing sites based on channel information included in the road cards.

Where applicable, most of the road cards indicate that the "road needs additional fish/hydro review prior to design." The existing and proposed roads in the FEIS were surveyed. However, we did not include complete site-specific information on every road card, because this information was collected for most sites but not for every road crossing site during the initial timber sale planning field reconnaissance. As per standards and guidelines included in the 1997 Forest Plan, at this point in the planning process, we have reviewed the location and route of proposed roads for this timber sale and eliminated some to minimize effects on wildlife and fish habitat, riparian habitat, and wetlands.

Where we did not collect site-specific crossing information, we used the stream maps from our geographic information system (stated as "source code 3" in the road cards) to provide some information for each crossing site. However, the maps provide only average channel type data and cannot accurately depict the actual stream channel characteristics at each crossing site. In most cases, road layout personnel are able to find channel constriction points that provide less incised and narrower crossing sites than the average channel information depicted in the GIS maps. For these reasons, we did not identify a proposed structure in the road cards for every site.

Specific crossing information would be gathered in the field after the ROD is published and there is a final decision to implement (during the road construction or reconstruction planning and design phase) to determine appropriate crossing structures for those areas for which no structure has been proposed. Stream channel information and the 1997 Forest Plan BMPs would be used to determine drainage and fish passage structures for all crossing sites. As per our Title 16 Memorandum of Understanding with

the state, we would obtain concurrence for the planned road design and crossing structures and the appropriate fish timing windows prior to project implementation. The standard measures that must be applied to every road segment would protect water quality and insure fish passage at applicable stream crossings. As explained in the Water, Soil, and Fish section of Chapter 3 of the FEIS, BMPs and standards and guidelines included in the 1997 Forest Plan would be followed to help ensure that water quality and fish passage standards are met.

Slopes:

One respondent stated, "all areas of known unstable or slide-prone slopes, and those areas with slope gradients greater than 67 percent that are located in cutting units or are traversed by roads must on the unit and road card maps" to be consistent with the requirements of 11 AAC 95.220(a)(9). For the reasons described above in response 6-4, we chose not to display this information on the unit and road cards. In addition, 11 AAC 95.220(a)(9) is only applicable to a plan of operation. A plan of operation is not prepared until a final alternative is selected, timber sale offering areas are chosen, units and roads are designed and laid out in the field.

Soils:

Respondents expressed concern that the unit cards do not include site-specific measures to protect soils. We did not include site-specific direction in many unit cards because the standard measures that must be applied to every unit or road segment will protect water quality. As explained in the DEIS (Chapter 3, p. 3-39), 1997 Forest Plan BMPs and standards and guidelines are designed to meet water quality standards. The side slopes of stream channels are often the portions of units with the least stable soils. The unit cards do include site-specific measures to protect these areas. Repeating them in the soils portion of the unit cards would be redundant. We have expanded the explanation in the FEIS to better clarify this.

Other Soil/Water Concerns:

Several comments expressed concern that some or all of the proposed alternatives would lead to accelerated erosion and would degrade water quality and fish habitat. In particular, the comments expressed concern about road construction and logging in areas with steep slopes. However, as explained in the DEIS and previously in this document, we will comply with the 1997 Forest Plan by adhering to the BMPs and standards and guidelines designed to protect water quality, even in steep areas. Furthermore, in Alternative F, which has the highest proportion of harvest on steep slopes, much of the harvest would involve taking less than 50 percent of the trees, and yarding would be accomplished with helicopters. Both of these measures would further reduce the risk of landslides.

One respondent stated that the DEIS did not present evidence that BMPs are effective. That question is beyond the scope of this project but is addressed by the annual Tongass Land and Resource Management Plan Monitoring Report. An annual implementation and effectiveness monitoring program that we conduct in cooperation with the State of Alaska and the Environmental Protection Agency allows us to evaluate whether BMPs and standards and guidelines do in fact protect water quality. If we find that they are not effective, we alter them. For an individual project such as this one, we apply the latest version of BMPs and standards and guidelines.

Another respondent stated that the DEIS did not adequately address impacts to Class IV stream channels. These channels are not mapped in our GIS stream layer. However, we do thoroughly evaluate them in the field. We review streams in all units and recommend protective measure, if necessary, in the unit cards.

6-5 Studies for monitoring effects are not being done.

There appears to be some confusion about the difference between implementation monitoring and effectiveness monitoring. Implementation monitoring involves evaluating all harvest units and roads proposed under the timber sale for compliance with 1997 Forest Plan BMPs and standards and

Appendix D

guidelines (see p. 3-47 of the DEIS.) This type of monitoring is undertaken to evaluate whether the resource protection measures were implemented, not whether they were effective.

Although no surveys on buffer effectiveness were performed in 1998, there is an on-going, long-term buffer effectiveness study being conducted. Pre- and post-harvest data on habitat characteristics was collected for two buffer sites, and preliminary results were presented at a watershed conference in 1998.

Resource specialists for the Tongass and other federal and state agency personnel are designing a long-term monitoring strategy for the Forest to address the effectiveness of standards and guidelines in protecting water quality, fish populations, and habitat. For the present, the strategy advocates continuation of the buffer effectiveness study and the more recent Management Indicator Species (MIS) monitoring project, which examines pre- and post-harvest resident fish populations and habitat condition in small basins. These effectiveness projects are part of the overall monitoring strategy for the Forest, which encompasses several projects to evaluate the effects of management guidelines on water and fish resources.

The 1997 Forest Plan monitoring strategy encompasses broad implementation monitoring and issue-specific effectiveness monitoring. The following is a list of the current monitoring efforts and those under proposal.

Current monitoring projects:

- Buffer Stability – addresses if buffers are withstanding wind disturbance on Class I, II and III streams.
- BMP Implementation – addresses if BMPs are being employed on new harvest units and roads.
- Road Condition Survey – assesses present condition of roads and fish passage through culverts.
- Buffer Effectiveness – addresses how well buffers protect riparian stands and fish habitat.
- Resident Fish Population – addresses how timber harvest effects resident fish populations and habitat conditions.
- Aquatic Habitat Assessment – Channel Condition Assessment by FSL.

Studies currently under development and/or proposal:

- Pink salmon pilot study – addresses sensitivity of pink salmon to intensive logging.
- Coho salmon study – FSL study.
- Landslide Inventory study – attempts to link upland disturbance to aquatic habitat conditions.
- Wetland study – assesses effects of harvest activities on wetlands.

6-6 Conduct stream surveys.

The stream class, channel type, and location of all affected streams in this area have been identified (see unit cards in Appendix B). The survey information identified the extent of Class I, II, and III habitat, and the appropriate management prescriptions have been noted.

The Region 10 Aquatic Ecosystem Management Handbook gives direction on the level of stream survey required for timber sale areas: the Tier 1 survey is a reconnaissance survey that provides information to apply Forest-wide standards and guidelines for fish habitat and water quality. The data are used to update the streams layer of the ARC-INFO database. Outputs provide information necessary for determining site-specific BMPs and Forest-wide standards and guidelines associated with channel type process groups and stream class. The Tier 1 level is the basic level of survey; it requires

verification or identification of the channel type, stream class, and location of streams (mapped and unmapped) within the timber sale area.

6-7 Conduct a watershed analysis.

The Southeast Chichagof Landscape Analysis (Shephard and others 1999) addresses riparian and aquatic resources for the individual watersheds within the project area.

Appendix J of the 1997 Forest Plan includes direction on the requirements for conducting a watershed analysis: a watershed analysis must be completed for any project decision that incorporates site-specific adjustment of process group standards and guidelines as provided for in the Riparian Forest-wide standards and guidelines. A watershed analysis is otherwise not required, but may be performed for a watershed if the responsible Line Officer determines it to be appropriate.

Since 1997 Forest Plan standards and guidelines for riparian forest areas are to be implemented and a landscape-level watershed analysis has been completed, it is not necessary to conduct any further analysis.

7-1 Avoid clearcutting, and limit logging to second-growth timber.

Comments included requests to reduce the amount of clearcutting proposed and to limit harvest to previously harvested areas. Harvest systems other than clearcut or clearcut with reserves range from 13 percent of the harvest acres in Alternative B to 89 percent in Alternative F. Clearcut prescriptions for most of the units require the retention of trees to meet various management objectives. Up to 50 percent of the trees within a unit may be retained under the clearcut with reserves prescription. Units in which this prescription is applied will not closely resemble traditional clearcuts in which the entire stand is removed. Response 9-1 below provides more information on alternatives to clearcutting.

Harvest of second growth stands is not recommended at this time. Past harvest within the project area has occurred on 1,744 acres. The earliest harvest took place in the 1950s. Some stands would benefit from precommercial thinning, but no opportunity exists for commercial harvest of second growth at this time.

One respondent disagreed with the Forest Service's objective to "seek to reduce clearcutting when other methods will meet land management objectives" and provided recommendations to change this 1997 Forest Plan objective. However, changes to 1997 Forest Plan goals and objectives are outside of the scope of this project.

7-2 Consider the economic efficiency of helicopter logging vs. building Road 75607. Provide an alternative that uses only helicopter logging.

Alternative F calls for helicopter harvest instead of building Road 75607. Logging system options were considered for all units in the development of each alternative (see the unit cards in Appendix B). Each option has constraints. For example, there is a physical limit as to how far a helicopter can yard material economically.

7-3 Are the alternatives economically feasible? Alternative F is the most economically favorable alternative.

Economic Feasibility:

One respondent stated that the alternatives would "not benefit anyone in the user areas (Tenakee Springs) only very limited regional inhabitants (loggers) and virtually none of the American taxpayers." The balance of resource use necessary to maintain a viable economic and social environment is not established at any one level in forest planning. Rather the process begins with long-

range planning at the national level and continues down through the regional and forest levels to the project planning level. The Finger Mountain EIS is a project-level analysis that addresses the economic issues and implements direction provided at higher levels of planning (Chapter 3, Social Values and Economics).

The 1997 Forest Plan FEIS includes a comprehensive analysis of the economic and social environment in Southeast Alaska, the Tongass National Forest, and the communities within these areas. This analysis was conducted by an interdisciplinary team that included economists, social scientists, recreation planners, wildlife and fish biologists, as well as specialists from other disciplines. The Economic and Social Environment section of the 1997 Forest Plan includes very detailed information on industries directly dependent upon the Forest, including the timber, recreation and tourism, salmon harvesting and processing, and mining industries. It also discusses the potential effects of each alternative on various communities within the Tongass National Forest (pp. 3-523 to 3-685). The analysis conducted for the 1997 Forest Plan concluded that only two employment sectors (timber and recreation/tourism) would show direct or indirect effects from Tongass National Forest management over the next decade (Forest Plan 1997, p. 2-67). Based on this analysis, the 1997 Forest Plan concluded that employment in the recreation and tourism industry was expected to increase moderately and at about the same amount under all alternatives during the first decade. Timber industry employment, in contrast, was expected to decrease under the majority of alternatives, including Alternative 11 (which is the basis of the 1997 Forest Plan) (Forest Plan 1997, p. 2-67). The Finger Mountain Project was designed to implement the 1997 Forest Plan, and the EIS prepared for this project tiers to the analysis in the Forest Plan FEIS.

With regard to the Finger Mountain Project, the Forest Service Manual (FSM 1970.6) states that "the responsible line officer determines the scope, appropriate level, and complexity of economic and social analysis needed." This project is a timber sale project. It was proposed to respond to the goals and objectives identified in the 1997 Forest Plan for the timber resource and to help move the project area toward the desired future condition identified in the 1997 Forest Plan for the lands within the specified LUDs. In addition, it was designed to be fully consistent with the applicable management direction and standards and guidelines of the 1997 Forest Plan. The Finger Mountain FEIS discusses the timber resource and harvest economics of the project in Chapter 3 under Social Values and Economics.

Alternative F:

A financial efficiency analysis produced net stumpage values ranging from -\$5 per ccf in Alternative B to -\$28 per ccf for Alternative F under a current market conditions. Market fluctuations may vary enough to produce a positive sale in future years. Market swings could show numbers in the range of -\$30/CCF today and still reach a positive stumpage value at time of sale. Given this range, all alternatives excluding the helicopter units would fall within that -\$30/CCF range.

Economics, however, is just one consideration used in selecting the preferred alternative. Other considerations include how well the alternative meets the purpose and need for the project and how it addresses the issues identified during scoping. The ROD for the FEIS further describes how the decision-maker balances competing interests in the Selected Alternative.

7-4 There is no economic benefit to anyone; the harvest must be subsidized; other economic benefits are impacted, especially tourism; employees are not hired locally; and the wood is shipped out of the country.

Economics:

A number of comments addressed the issue of economic benefits of the proposed timber sale. For example, one respondent wrote, "there is no benefit to the local community of Tenakee Springs from the proposal, essentially no benefit to the State of Alaska or to the public in general." The balance of resource use necessary to maintain a viable economic and social environment is not established at any one level of planning (e.g., national, regional, forest, or project levels). The Finger Mountain project level analysis implements the direction provided at higher levels of planning. The 1997 Forest Plan

addressed this issue by allocating the Forest to a variety of LUDs, establishing general goals and objectives for the management of the Forest, and identifying the desired future condition of the lands within the various LUDs. The 1997 Forest Plan also includes a comprehensive analysis of the economic and social environment in Southeast Alaska, the Tongass National Forest, and the communities within these areas. This analysis includes detailed information on industries directly dependent upon the Forest, including the timber industry and the recreation and tourism industry. The Finger Mountain Project was designed to implement the 1997 Forest Plan, and the FEIS prepared for this project tiers to the analysis in the 1997 Forest Plan. Numbers for direct employment and direct income are given in Table 3-45. The project strives for a balance between local, regional, and national wants, needs and values. Harvests from Tongass National Forest lands meet the needs in Southeast Alaska.

One respondent wrote, "the economic efficiency analysis falls well short of including established and accepted methodologies of valuating non-market goods and services. The Forest Service has failed to adequately place value on any economic impacts outside of those directly associated with agency and timber related employment." It is important to note here that there is a difference between financial efficiency analysis (required for every timber sale project) and economic efficiency analysis (not required for every project) (see FSH 2409.18, 13). Financial efficiency analysis compares the Forest Service's estimated direct expenditures with the estimated financial revenues of proposed timber sales. The Forest Service is not required to quantify the non-market benefits and costs associated with every timber sale. However, the Forest Service is required to "insure that unquantified environmental amenities and values [are] given appropriate consideration in decision making along with economic and technical considerations" (42 USC 4332(2)(B)). As stated above, the Finger Mountain DEIS and FEIS analyzed the potential effects of the project on "unquantified environmental amenities and values," such as water resources, recreation and scenery, wildlife, subsistence, and social concerns.

Timber Export:

A concern was raised regarding the export of wood out of the country. The Alaska Region estimates the volume of timber expected to be processed when determining the volume to offer for sale in any given year. This estimate takes into account the volume in the average timber sale that is typically chipped or exported. The majority of this volume was Alaska yellow and western red cedar, followed by low-grade and utility volume. Timber, primarily Yellow cedar, is approved for export on a case-by-case basis only with the approval of the Regional Forester. As stated in the 1998 Draft Timber Supply and Demand Report, under new regional direction regarding western red cedar exports, utility and western red cedar logs must first be appraised to the local Alaska market. If the buyer can demonstrate the lack of a market for this material, the timber is re-appraised for export to markets outside Alaska. While the local demand for certain components of the timber offered from the Tongass National Forest may currently be low, the volume of low grade and utility volume exported can be expected to decrease over time, provided that local operators acquire the equipment necessary to utilize smaller diameter logs, fewer log export permits are processed, and the timber market improves.

Recreation and Tourism:

Comments stated a concern regarding the effect of harvest activities on recreation use in the area of Tenakee Springs. Economic impacts to tourism are described in Chapter 3 of the FEIS under Recreation and are further described in issue 3-3. All action alternatives will affect tourism dollars generated.

Real Estate Values:

Real estate values for private lands and the potential effect of timber management activities on these values were discussed on page 1-14 and in Chapter 3 in the Draft EIS.

Market Demand:

One respondent stated, "the DEIS fails to show that a market demand exists," and "there is no discernable market for the timber in this sale, especially in light of the closure of pulp mills in Sitka

and Ketchikan.” The direction for timber supply from the Tongass National Forest included in Section 101 of the Tongass Timber Reform Act (TTRA) is twofold. First, timber supply should meet the annual market demand from the Forest. Second, market demand from the Forest should be met for each planning cycle, to the extent consistent with providing for the multiple use and sustained yield of all renewable resources and subject to applicable law. Demand for timber other than that which would be processed at pulp mills exists in Southeast Alaska. Appendix A describes planned timber sales across the Tongass.

Projections of future demand for timber do not drive the timber sale program. The timber sale program is based on four “pools” of timber volume including: timber volume in preparation, timber volume in appeals and litigation, timber volume available for sale and timber volume under contract. As purchasers harvest timber, they deplete the volume in the fourth pool. Managers track harvest and offer sales that give the industry as a whole the opportunity to replace this volume. Although there can be variations, over the long-term timber harvests will equal timber sales. Demand projections are important for Forest Service program planning. They also provide a basis for expectations regarding future harvest and thus provide an important source of information for establishing the schedule of probable future sale offerings.

8-1 Concern over the volume that the Finger Mountain Project provides.

Appendix A describes planned timber sales across the Tongass. An analysis of market demand completed for the 1997 Forest Plan showed available harvest on the Forest to meet that demand [Evaluating the Demand for Tongass Timber (USDA, Forest, R10: Morse: September 28, 1998)]. The Finger Mountain Timber Sale(s) Project plays a role in meeting demand for timber from the Tongass National Forest. All volume is planned to maintain the sustainability of offers. Each of the action alternatives would permit small sales. Each involves the construction of an LTF and new roads and the repair of existing roads, thus providing infrastructure for future sales. Moreover, several units could be excluded from the larger sale and offered after the roads were built. This is a common practice and is dependent on the demand for small sales and market conditions at the time of offer.

The Forest Service is committed to providing a range of timber sale sizes in all of the Tongass. By setting aside specific units for small sale offerings, we are providing opportunities for small-scale operators while maintaining the ability of the Tongass to meet market demand. Appendix A of the EIS gives a detailed explanation of the rationale for a specific timber sale project and its importance to the multi-year timber program on the Tongass.

8-2 The Tongass and the project area have been over-harvested. Management should be for a sustained yield.

Comments included statements such as the following, “Tenakee Inlet has already been the location of an intensive clear-cut area;” “for too long the forests of Tenakee Inlet have been clearcut” and “Tenakee Inlet has been heavily impacted by timber sales and clear-cutting over its entire length.” A primary goal of the 1997 Forest Plan is to provide for sustainability of the resources of the Tongass National Forest while directing the coordination of multiple uses such as outdoor recreation, timber, wildlife, fish, watersheds, and wilderness. To accomplish this goal, the 1997 Forest Plan includes a spectrum of land allocations that range from those that allow no ground-disturbing activities to land allocations that allow resource development (Forest Plan ROD 1997, p. 1). Harvest activities proposed in the Finger Mountain FEIS would occur on lands allocated for timber harvest. The sustained yield of timber harvest is calculated in the 1997 Forest Plan on the available timberlands across the entire Forest. The Silviculture and Timber Management section of Chapter 3 of the FEIS discusses acres feasibly available for harvest and expected harvest rates over the next 50 years. Appendix A shows planned sales across the Tongass.

Within the 72,780-acre project area, 61,522 acres are designated for Timber Production and a total of 35,917 acres of productive forest acres are available for harvest. Past harvest within the project area has occurred on 1,744 acres within the available productive forest acres. These acres represent 8.6 percent harvest over a 40-plus-year period (since the late 1950s). The percent of productive forest acres proposed for harvested range from 0.6 percent to 2.8 percent, depending on the alternative. Of the other productive forest acres in the project area, 11,251 acres are designated as Old-Growth Habitat. A minimum of 16% of each VCU has been designated as small OGR. In addition, the project area is bounded on the east by the Kadashan drainage, which is designated as a large OGR. If timber harvest were to occur at the maximum level allowed in the 1997 Forest Plan, by 2095 84% of the POG that existed in 1956 would remain. Therefore, maintaining 1997 Forest Plan land allocations and following 1997 Forest Plan standards and guidelines will maintain sustainability in the project area.

9-1 Do not clearcut at all; use other methods of harvest.

The 1997 Forest Plan direction is to clearcut (i.e., apply even-aged management) only where it is determined to be the best system available to meet the objectives and requirements of the LUDs. It assumes that clearcutting will predominate regeneration timber harvesting (about 80 percent). None of the alternatives relies exclusively on clearcutting. Harvest systems other than clearcutting range from 13 percent of the harvest acres in Alternative B to 89 percent in Alternative F. Management systems are considered for each unit (see the unit cards in Appendix B).

The application of the clearcutting silvicultural system to the forests of Southeast Alaska is guided by laws, regulations, and policies, as well as by the capabilities of the forests and their environments. In this project, we limited clearcutting to areas where it is essential to meet 1997 Forest Plan objectives; to minimize the occurrence of disease infestations, windthrow, or logging damage; and to provide for the establishment and growth of desired shade intolerant trees (Sitka spruce in particular). To eliminate clearcut as a harvest option would severely limit the project's ability to meet 1997 Forest Plan objectives. As a result, the issue of "no clearcutting" is beyond the scope of this project. (See also response 7-1 above.)

Comments were received regarding the use of the term "two-aged management" to refer to the clearcut with reserves harvest method. For more information, please refer to the entry for Regeneration (Reproduction) Methods in the Glossary in Chapter 4.

11-1 Show cumulative effects for this and other planned projects.

Several comments expressed concern that the cumulative effects of the current planned timber sale event, along with previous and future sales and other activities, were not properly addressed in the DEIS. The Council on Environmental Quality (CEQ) regulations (40 CFR 1508.7) define "cumulative impact" as the impact on the environment that results from the incremental impact of the action when added to other past, present, and foreseeable future actions. Cumulative effects for the overall timber program on the Tongass National Forest are addressed in the 1997 Forest Plan FEIS. Although tiered to the 1997 Forest Plan, the FEIS, Chapter 3, discusses the cumulative effects at a more local level. Resource analyses describe the relative impacts of timber harvest, road construction, and other activities occurring in the Finger Mountain Project Area.

Other comments included that "the Environmental Impact Statement written for logging the south side of Tenakee Inlet (Finger Mountain Sale) does not take into account the cumulative effects of the proposed logging on the north side of Tenakee Inlet (Indian River Sale)." Cumulative actions are listed and include logging since 1956 and the Indian River Timber Sale. This timber sale and others were addressed specifically in many of the resource analyses that comprise Chapter 3, including but not limited to the sections on Biodiversity and Old-growth, Silviculture and Timber Management, and Recreation.

11-2 Change the Land Use Designations in the FEIS.

The Finger Mountain EIS is a project-level analysis. Its scope is confined to addressing the significant issues and possible environmental consequences of the project. It does not attempt to address decisions made at higher levels. The 1997 Forest Plan determined the LUDs; changing them is beyond the scope of this document.

11-3 Address the review requirements of the ADF&G and USFWS. Review Forest Plan LUDs.

Comments were received expressing concern that the Alaska Department of Fish and Game (ADF&G) and U.S. Fish and Wildlife Service (USFWS) be involved in an interagency review of small Old-growth Habitat LUDs "as directed in the 1997 Forest Plan Revision ROD and reiterated in the 1999 ROD." Both the 1997 and 1999 Forest Plan RODs state, "the Forest Service also will work with other Federal and State agencies on interagency reviews of the location of small Old-growth Habitat LUD reserves **in relation to where new projects are being planned.**" (Emphasis added. USDA 1997, p. 33; USDA 1999, p. 53). This requirement was worded so that on-going project planning efforts would not be disrupted. The 1997 ROD further defined the Finger Mountain Project as a "timber sale project now being planned, but for which a NEPA decision document will not be signed before the effective date of this Plan" (USDA 1997, p. 41). New projects were defined as "timber sale projects for which the project-level NEPA process has not yet begun" (USDA 1997, p. 41). Therefore, the Finger Mountain Project is not a new project and is not subject to interagency reviews of the location of small Old-growth Habitat LUD Reserves.

Nevertheless, the Finger Mountain Project is subject to interagency review regarding incorporation of the "new" standards and guidelines (1997 Forest Plan ROD) that address landscape connectivity, endemic terrestrial mammals, the northern goshawk, and the American marten. These interagency reviews were conducted in September and October of 1997. They included representatives from ADF&G, Alaska Department of Natural Resources, Alaska Division of Governmental Coordination, USFWS, National Marine Fisheries Service, and the Environmental Protection Agency. In addition, members of the interdisciplinary team consulted with ADF&G and FWS personnel in February 1999 to evaluate the need for additional protection of important brown bear foraging sites and to review the location of small OGR. Interagency consultation occurred again in October 2000 to evaluate the need for additional protection of important brown bear foraging sites. Another interagency consultation took place in April 2003 to further review the location of small OGR.

11-4 Do not log in Seal Bay or Saltery Bay.

Comments were received that requested there be no harvest in Seal or Saltery Bays. Specific comments included, "there should be no clearcutting or road building in roadless areas, in particular Seal Bay." Harvest in Saltery Bay was deferred. Access to timber in this area was designed using a road to be constructed through VCU 232 (Crab Bay). We decided to defer VCU 232 at this time, as stated in the Alternatives Eliminated from Detailed Study section of Chapter 2 of the FEIS. Seal Bay is outside of the Analysis Area and is buffered by a designated OGR.

11-5 Form guidelines that will ensure that enough trees are left.

Marking guidelines are developed at the time of sale implementation as part of silvicultural prescriptions. General marking needs are discussed in unit cards so that unit/EIS objectives can be included in the final silvicultural prescriptions and marking guides.

11-6 Protect the petroglyphs in VCU 233.

There was concern over the monitoring of an extensive petroglyphs site. The Forest Service is committed to preserving cultural resources on the National Forest and to achieve that commitment we will be developing a monitoring plan. In the Heritage section of Chapter 3 of this FEIS, we have made commitments to conducting monitoring activities for the protection of known and potentially unknown heritage resources. Vicki Wisenbaugh of the Tenakee Historic Collection has requested that, as an interested party, she be involved in the monitoring. At the very least, she asked to be appraised of the method and frequency of the program. We would like very much to work with Ms. Wisenbaugh and the Tenakee Historic Collection in developing a monitoring program for the Crab Bay Petroglyph site. We share her concern that this important archaeological site be protected from any deleterious effects due to the logging activities. This monitoring plan will last at least for the duration of the proposed logging activities associated with this timber sale. The involvement of the Tenakee Historic Collection should alleviate concerns brought forward by the CCC, for it has recommended that Tenakee Historic Collection involvement is appropriate.

11-7 How will the existing and proposed roads be maintained?

Comments suggested that the Forest Service currently has roads that it cannot maintain; therefore, the construction of new roads is not preferred. The Forest Service has identified a substantial backlog of road maintenance. Under the standards set by the Federal Accounting Standards Advisory Board, this backlog includes work needed to meet standards that have changed since the roads were built. Much of the maintenance backlog relates to the ability of roads to perform the mission described in the road management objectives (Road Cards).

The Forest Service has also engaged in rule making concerning road management. The "Road Policy" builds on scientific efforts from the late 1990s that resulted in a Road Analysis Process (RAP) published in August 1999. The policies put into place by "Road Policy" decisions require the Forest Service to use RAP to make informed decisions about roads, intended uses, and future management options. Use of RAP has identified roads that are no longer needed and that can be decommissioned. About \$200,000 in road maintenance funding was expended in FY 2000 for decommissioning roads. In FY 2003, an additional \$425,000 is planned for road improvements on the Corner Bay Road system for fish passage Chichagof Islands.

Furthermore, Congress has recognized the need for additional maintenance work. Congress appropriated \$50 million to the Forest Service in FY 2001 for deferred maintenance needs (Title 8, PL 106-291). The same legislation authorized the continuation of a program to address deferred maintenance for FY 2002 through FY 2006.

The proposed action and alternatives have been developed, in part, by incorporation and analysis of the expected costs. Road management objectives for the roads to be constructed have been selected based on recent funding history. While the Forest Service cannot predict future legislation, there is reasonable expectation that the mainline road prescriptions can be met.

11-8 Do more cutting up Indian River and not any in Crab Bay.

We decided to defer harvest in VCU 232 (Crab Bay) at this time, as stated in the DEIS, Alternatives Eliminated from Detailed Study (p. 2-10). The decision to implement any additional or fewer activities in the Indian River drainage is beyond the scope of this project. Harvest activities are currently being analyzed under the Indian River Timber Sale(s) EIS. Appendix A explains the rationale for a specific timber sale project.

11-9 What will be the average volume per acre harvested?

The average harvest ranges from a low of 4.1 thousand board feet (MBF)/acre in Alternative H to a high of 21.4 MBF/acre in Alternative B. These numbers may be derived from Appendix B, Unit Cards and Harvest Unit Detail Tables. Harvest volumes per acre will be different for the same unit depending on the management system selected, which varies by alternative.

11-10 Put specific mitigation and implementation procedures on the unit cards.

Specific mitigation or implementation measures are given for each unit; see the FEIS, Appendix B, Unit Cards and Harvest Unit Detail Tables. If "none" is entered in a particular unit for Pertinent Resource Information, then no special needs or mitigation measures were identified for that resource beyond those already required by 1997 Forest Plan Standards and Guidelines. All units have had resource reviews signed and dated by specialists. See also 1997 Forest Plan Standards and Guidelines, Project-Specific Mitigation, and Monitoring under Items Common to All Alternatives in Chapter 2 of the FEIS. Refer to responses 6-3 and 1-4 for additional information.

11-11 Improve public access to referenced material, literature cited, and EISs

All references cited are available in the planning record for the Finger Mountain Timber Sale(s) EIS, located at the Sitka Ranger District. Copies of EISs, including the Finger Mountain Timber Sale(s) EIS, are distributed to local libraries and to anyone who expresses an interest.

11-12 Why was Tenakee Springs not described as being low income?

One respondent sought the rationale behind the determination that Tenakee Springs is not a "low income" community. Some people who live in Tenakee Springs are low income, but that does not qualify the whole town for the category. Because employment and income information reflecting the status of Tenakee Spring's economy separate from the Skagway/Hoonah/Angoon census area was not available in comparable data sets, business licenses were used to reflect specific economic activity in the community. The Social and Economic Resource Report by J. Schaefer, located in the project planning record, gives information that is more detailed. All actions will consider potentially disproportionate effects on minority or low-income communities.

11-13 Describe post-harvest treatments.

A concern was raised that "older harvest areas in the project area and those in Tenakee Inlet/Freshwater Bay had not received proper post-harvest treatment (reseeding, thinning, etc.) and that proposed areas would fare no better." Possible post-harvest treatment activities are given by unit under Integrated Harvest Prescription; see Appendix B, Unit Cards and Harvest Unit Detail Tables. These are considered stand diagnoses and will vary by alternative. Silvicultural prescriptions specify post-harvest treatments such as planting for diversity and are finalized at the time of implementation.

11-14 The project does not follow direction from the Forest Plan for collaborative stewardship.

During the scoping process for the Finger Mountain Project, we invited the participation of affected federal, state, and local agencies, federally recognized native tribes, and any other interested groups and individuals. Since the Finger Mountain Project Area is a subset of the Southeast Chichagof Project Area analysis completed in 1992, scoping results from that project were also used in developing the Finger Mountain Project alternatives. In addition, numerous letters, contacts, and meetings took place as a result of the Finger Mountain scoping effort. As recent as January 24, 2000, the District met with residents of Tenakee Springs to discuss the alternatives including the CCC Alternative and how they were designed around a specific issue. Throughout the planning process the Forest Service has met

with other government agencies, as recent as January of 2001. Issues such as OGR options were discussed at these meetings. In addition, meetings were held in Tenakee Springs for the SEIS.

11-15 Evaluate Roadless Areas.

The discussion of Roadless Areas in Chapter 3 has been extensively modified in an effort to clarify related issues. These information updates include a discussion of the Roadless Area Conservation FEIS published in November of 2000. A roadless inventory was completed for the SEIS. GIS layers for Inventoried Roadless Areas were taken from this effort in the roadless analysis found in Chapter 3. Within the VCU's that include proposed activities, harvesting and associated road building have occurred in the past. While the Project Area is allocated to Timber Production, it should be noted that the vast majority of the Tongass is still characterized by extensive, unmodified natural environments.

11-16 Comply with regulations: Alaska Antidegradation Regulation, Executive Order 11990, and Corps of Engineers 404 permit (permit requirements for road construction in wetlands).

Several comments state that the DEIS does not adequately show that the proposed road construction is exempt from Section 404 of the Clean Water Act. The effects of the Finger Mountain proposed road activities on water were addressed in Chapter 3 of the FEIS under Water, Soil, and Fish. The U.S. Army Corps of Engineers (COE) has regulatory authority over the discharge of dredged or fill material into waters of the U.S., including wetlands, and is responsible for determinations under Section 404 of the CWA.

A discharge of dredge or fill material from normal silviculture activities such as harvesting for the production of forest products is exempt from Section 404 permitting requirements in waters of the United States, including wetlands (404(f)(1)(A)). Forest roads qualify for this exemption only if they are constructed and maintained in accordance with BMPs to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404(f)(1)(E)). The BMPs that must be followed are specified in 33 CFR 323.4(a). These specific BMPs have been incorporated into the Forest Service's Soil and Water Conservation Handbook under BMP 12.5.

The Army Corps of Engineers (COE) (the agency responsible for determining if the exemption applies) has reviewed the DEIS and found that the silvicultural exemption does apply. We will apply BMPs and work with the COE through project implementation to ensure that the project meets the exemption. If at some point the Corps determines it does not, we will apply for a permit.

The FEIS discusses the potential effects of the project on wetlands in the project area. It states that with the proper application of 1997 Forest Plan BMPs and standards and guidelines (as described in Chapter 3 under Water, Soil and Fish and Wetlands), the proposed alternatives will not lead to significant direct, indirect, or cumulative impacts to water quality or to wetlands. Therefore, the alternatives comply with the Alaska Antidegradation Regulation and Executive Order 11990. The timber harvest and road construction operator will be responsible for compliance with antidegradation regulations, including obtaining any variance required by the State, and the operator will be monitored for compliance by the Forest Service.

The Clean Water Act (Sections 208 and 319) recognizes the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

Appendix **D**

The Forest Service must apply BMPs that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, The State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FS Handbook 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the Tongass Land Management Plan.

David & Mary Amonson
3032 SW Vesta St
Portland, OR 97219
503-245-9335
davidamonson@juno.com

February 8, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signinaka Way
Sitka, AK 99835

I wish to go on record as being against the Finger Mountain Timber sale. I feel that it will adversely affect the environmental health, and the livability of the Tenakee Springs area.

I have seen photographs of Tongas Forest clear-cutting and it ⁸⁻² appeared to be devastating. The timber in that area is very slow growing and the area will never fully recover. I don't want to see the same thing happen again.

I am in favor of plan A, NO ACTION.

Sincerely,

David Amonson

David Amonson

Alaska Forest Association, Inc.

February 28, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signinaka Way
Sitka, AK 99835

RE: Finger Mountain Timber Sale(s) DEIS

Dear Mr. Franzel:

This letter constitutes the Alaska Forest Association's (AFA) comments on the Finger Mountain Timber Sale(s) Draft Environmental Impact Statement (DEIS), Tongass National Forest. The AFA has approximately 90 members and 180 associate members throughout Alaska, accounting for more than 1,400 direct year-round job equivalent employees in Southeast Alaska. The AFA, its members, their employees and the timber dependent communities of Southeast Alaska depend on the Forest Service to provide economic timber sales of sufficient volume to meet the needs of the Southeast Alaska forest products harvesting and manufacturing industry.

The AFA has reviewed the Finger Mountain DEIS published and distributed in December 1999. AFA supports the Finger Mountain project and recommends the adoption of Alternative B as the selected alternative (see discussion below). AFA looks forward to the successful implementation of the Finger Mountain Timber Sale(s) project because it will help the Tongass National Forest meet all the goals set forth in the Tongass Land Management Plan (TLMP), including production of sufficient timber to meet annual and planning cycle market demand from the Tongass National Forest under provisions of §101 of the Tongass Timber Reform Act (TTTRA).

Statement of Purpose and Need

AFA supports the Purpose and Need statement for the Finger Mountain project set forth on pages 4 & 5 of the DEIS and supported by the narrative in Appendix A, particularly the following:

- 1) manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained basis and in an *economically efficient manner* (emphasis added);
- 2) seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle;
- 3) provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska; and



111 STEEDMAN SUITE 200
KETCHIKAN, ALASKA 99801-6599
Phone 907/226-6714
FAX 907/226-5920

- 4) support a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

In addition, the AFA notes with approval the DEIS's citation of two of the Timber Production LUD goals set forth in TLMP, viz.,

- maintain and promote industrial wood production from suitable timber lands, providing a continuous supply of wood to meet society's needs; and
- manage these lands for sustained long-term timber yields.

The AFA also supports the following timber management objectives for lands designated Timber Production:

- improve timber growth and productivity on commercial forest lands; and
- plan, inventory, prepare, offer, sell and administer timber sales and permits to ensure the orderly development of timber production.

However, the AFA continues to find one objective troubling: The Forest Service should not "seek to reduce clearcutting when other methods will meet land management objectives." The caveat should not be merely "meeting land management objectives," but must include additional elements:

The Forest Service should "seek to reduce clearcutting"

- ▶ *only* when another prescription is the silviculturally preferred harvest method;
- ▶ *only* when another method will ensure optimum reproduction and promote a healthy second growth stand with minimal type conversion;
- ▶ *only* when sale economics permit harvest method flexibility.

Goals for the Modified Landscape LUD are discussed under the header, **Visual Concerns**, below.

The purpose and need section (p. 1-4) states that this project "provides supplemental analysis for six Value Comparison Units (VCUs) within the 1992 Southeast Chichagof project area." The AFA was a party to *Alaska Wilderness Recreation and Tourism Association v. Morrison*, 67 F.3d 723 (9th Cir. 1995), the lawsuit that led to this supplemental analysis and is painfully familiar with the delays associated with offering this timber. Moreover, the present DEIS represents a significant loss of volume compared with the original harvest plans for the Crab Bay and Inbetween area under the Southeast Chichagof Project Area FEIS.

Since the Settlement Agreement in *AWRTA* between the government and plaintiffs was filed in May of 1996, the completion of the TLMP revision in 1997 (Regional Forester Janik's ROD) and the significant amendments unilaterally implemented by Under Secretary Lyons' 1999 ROD have dramatically altered the management of the Tongass National Forest. The forestwide acreage deemed suitable, available and scheduled for harvest has now been reduced to 576,000. Furthermore, the ASQ is apportioned between two Non-Interchangeable Components and is further apportioned among the several Ranger Districts. In no case can one Ranger District increase its

supply to make up for any shortfall that may occur in another Ranger District. Likewise, NIC I timber harvest cannot be substituted for a shortfall in NIC II harvest. Therefore, the effective ASQ is 153 MMbf, and this is only achievable if each Ranger District meets its quota.¹ These changes make the remaining available volume in the Crab Bay/Tenakee Inlet area *extremely* important in supplying the Sitka Ranger District's ASQ contribution.

8-1

The Finger Mountain Timber Sale(s) will provide important pipeline volume to support Southeast Alaska's existing and future timber industry which contributes manufacturing jobs to the regional economy.² It is therefore an important part of the sales program proposed by the Forest Service to satisfy the requirements of TTRA, §101.³ The Forest Service, in TLMP, relied on *Timber Products Outputs and Timber Harvests in Alaska: projections for 1997-2010*, by David Brooks and Richard Haynes (1997 Brooks & Haynes report). AFA believes the 1997 Brooks & Haynes report to be deficient in its analysis of the present and future demand for Tongass timber. The Forest Service should acknowledge the timber industry's needs and attempt to provide the maximum economically feasible volume from the Finger Mountain project. While a project-level EIS is not the place to present a full blown demand analysis, the following information should be noted and incorporated into the FEIS for the Finger Mountain Timber Sale(s) project:

- Uncut timber under contract ("pool three") as of January 31, 2000 was 369.85 mmbf, according to information released by the Region 10 Office of Timber Management;
- The current installed normal operating capacity of sawmills served by the Tongass National Forest is 355.5 mmbf, and the manufacturing facilities are currently operating at less than 50% of normal operating capacity;⁴
- The Forest Service should consider the potential for an expanding timber industry when calculating timber demand from the Tongass. For example, a new veneer production facility is being built for operation at Ward Cove by Gateway Forest Products, thus increasing the Tongass-dependent installed mill capacity and demonstrating an aspect of demand (specifically, for lower grade bernalock logs) not encompassed by the 1997 Brooks and Haynes report;
- If the Tongass timber sale program is constrained by the 1997 Brooks and Haynes estimates, the government will frustrate the efforts of Southeast Alaska's forest products manufacturers to respond to changing market opportunities;
- World demand for wood far exceeds the biological yield of the Tongass National Forest. Market demand is unlimited for products from Tongass-type timber. The principal limitation on the manufacturing capabilities of sawmills in Southeast Alaska in addressing the demand

¹ See chart and narrative in Appendix A, p. 9.

² See the discussion of the Pipeline Pool in Appendix A, pp. 6 & 7.

³ See discussion of timber demand in the DEIS, p. 1-14 and Appendix A, pp. 4 - 7.

⁴ See Appendix A, p. 6.

⁵ See Attachment 1.

for products manufactured from Tongass timber is the volume of economic timber made available by the Forest Service;

- The Forest Service is in direct control of the timber supply needed by the domestic processing timber industry in Southeast Alaska, and the agency should recognize that every board foot of volume made available at the project level is important since the only real constraint on industry's ability to develop new markets for Alaska sawn products is supply; and
- Economies of scale must be considered in promoting value added production.

B-1

Visual Resources

The DEIS points out that some of the harvest units proposed for the Finger Mountain project area are visible from the community of Tenakee Springs. AFA recognizes the importance of protecting important scenic values in the Tongass, but suggests that the agency must balance the interests of the various uses of the forest based on the overall opportunities presented throughout the nearly 17 million acres of the Tongass National Forest. Given the limited number of acres in which timber harvest is allowed under the recently revised Forest Plan (1999 Record of Decision), the Forest Service must seek to maximize the harvest on those areas to the greatest extent possible under applicable laws. To meet the management objective of supplying sufficient timber to meet market demand will take the entire Allowable Sale Quantity provided for in the Forest Plan. This plan limits the ability to expand the industry's production into more value added products, so the Forest Service must strive to avoid over-implementation of standards and guidelines, including VQOs.

11-2

It does not appear that any harvest is planned for the Modified Landscape LUDs within the project area under the Preferred Alternative (Alt B), with the possible exception of the extreme downslope areas of Units 2040A and 2040B. If the project does finally include harvest from lands designated Modified Landscape, the Forest Service should attempt to achieve VQOs in ways that have the least impact on the productive capabilities of those areas. This should include non-significant Forest Plan amendments which move acres from Modified Landscape LUDs to Timber Production LUDs where site-specific evaluations indicate the boundaries have been misplaced and the timber stands are *not* visible from "popular" roads, trails, communities, etc.

AFA supports Alternative B as the Preferred Alternative with some potential modifications

Alternative B provides TLMF-required environmental protection and likewise provides adequately for other multiple-use functions of the Tenakee Inlet area. It also appears to satisfy the need for economic timber sales from the project area. Wildlife, fisheries, subsistence, cultural, visual and recreational concerns are protected in this alternative.

Some temporary displacement of recreation usage is projected to occur in Crab Bay during the project (p. 3-79), but this is part of accommodating the matrix of multiple uses of the forest, mandated under the Multiple-Use Sustained-Yield Act of 1960 and the National Forest Management Act of 1976. This is likewise true of the projected noise effects on activities in Little Seal Bay. The DEIS appropriately notes that these effects are temporary and cause no lasting changes in forest recreational use.

The DEIS indicates that Alternative B will return value to the treasury under other than low market conditions while also providing much needed timber volume. Alternative B is appropriately structured for future sales that will meet the needs of small operators from Tenakee Springs.

The AFA suggests the following be considered in planning timber sales from the Finger Mountain project area:

- Where TLMF S&Gs require structure to be left in a unit, the Forest Service should, to the extent feasible, meet the retention requirements by leaving unmerchantable and low value timber.
- Among other factors, the Forest Service should consider logs per mbf, volume per acre and recovery per mile of road when evaluating the economics of each timber sale project, since viable economic is as important an issue as volume in making these sales attractive to potential purchasers.
- The Forest Service should carefully consider proposed road 75607. It appears this road will encounter significant costs due to multiple stream crossings. The agency should carefully weigh the value of the timber in the high-retention units for which this road will provide access. If the units will not return sufficient value over costs because of retention standards, the agency should consider dropping these units and attempting to find offset volume from other units in the potential unit pool. In the alternative, the Forest Service should consider whether units 1973, 1976 and 1977 can sustain the costs of helicopter harvest if the 75607 road is eliminated.

7-2

The Alaska Forest Association appreciates the opportunity to participate in the planning of the Finger Mountain Timber Sale(s) project. Please contact me at (907) 225-6114 if you have any questions concerning these comments.

Sincerely,



Jack Melpis
Executive Director

Attachment: Summary of Sawmill Capacity in Southeast Alaska

Attachment 1

Summary of Sawmill Capacity in Southeast Alaska July 8, 1998

Annual Normal Operating Sawmill Capacity (mmbf)*

Annette Hemlock	70
Jim Ensley	5
Gateway Forest Products	50
Herring Bay	9.5
Icy Straits	10
The Mill	10
M.I.T.E.	10
Pacific Rim Cedar	7
Seley Corporation	24
Various small mills	10
Viking Lumber	40
SBL Wrangell	110
	<u> </u>
	355.5

* Volumes listed reflect capacity, not recently attained operating levels.

Source: AFA telephone survey, conducted during the month of June, 1998.

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Facsimile Transmittal

SEARHC Audiology / ENT

222 Tongass Drive
Sitka, Alaska 99835
Telephone 907-966-8366 TO 907 747 4331
Fax 907-966-8673

To Mr. Franzel

Date:

2-25-00

Attention:

Mr. Jim Franzel - District Ranger.

From:

Dr. J. Z. Ainsworth-

Number of pages (including this cover):

Comment(s):

I am against any more clear cutting in
The Finger Mountain and surrounding Area 2 - 9-1
All logging should be confined to existing
Roads - & I certainly support the 3-1
No New Roads proposal to include the Tongass -

Respectfully yours - J. Z. Ainsworth

This information is strictly Confidential and any further disclosure other than to the party indicated is unauthorized and prohibited. If you receive this transmittal erroneously, please call the number above and arrange for the return of this information. Thank You

Reply Requested: Yes No

February 22, 2000

Ms. Lisa Winn, Team Leader
U.S. Forest Service
204 Signaka Way
Sitka, AK 99835

Dear Ms. Winn:

SUBJECT: FINGER MOUNTAIN TIMBER SALE DEIS
State ID No. AK 0001-051J
PROPOSED CONSISTENCY FINDING

The Division of Governmental Coordination (DGC) has coordinated the State's review of the U.S. Forest Service's consistency determination for the proposed Finger Mountain Timber Sale. The FS found the activity consistent, to the maximum extent practicable, with the Alaska Coastal Management Program (ACMP).

The USFS has identified Alternative B as the Preferred Alternative and Proposed Action for this timber sale. This alternative proposes the harvest of approximately 936 acres of forest land, producing approximately 21.4 MMBF of timber. New specified road construction would be 9.86 miles, reconstructed road would total 13.4 miles, and 10.9 miles of temporary roads would be constructed.

The Forest Service, DGC and other state agencies have worked very hard to develop an MOU that addresses information needs for ACMP review of Forest Service timber sales. This MOU was signed on February 16, 2000. While the MOU had not yet been signed during development of the Finger Mountain DEIS, and was not binding on any of the parties at that time, it would have been helpful if the information needs listed in the Draft MOU had been followed and provided in the DEIS.

This proposed consistency finding, developed under 6 AAC 50, applies to the federal consistency determination required for the project per 15 CFR 930 Subpart C. The following comments are offered pursuant to 6 AAC 50 of the ACMP. We find the project consistent, subject to the specifications listed below. ACMP (FPA) standards are cited where applicable. NEPA, and Clean Water Act Section 319 comments are also attached to this finding.

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ACMP Consistency Finding:

Unit Cards

We appreciated the depiction of the windfirm management zones on the unit card maps, as well as the narrative descriptions of the methods that will be used to provide reasonable assurance of windfirmness for the process group buffers that will be retained along all Class I, II, and III streams in the project area. It would have been helpful if the Soils section on all of the cards included information regarding slope steepness and suspension objectives, or other mitigation measures such as silvicultural prescriptions that will be used to minimize soil disturbance and maintain slope stability during and subsequent to yarding operations. The full implementation of the TLMF process group standards and guidelines (RIP2.III.E) along all Class I, II, and III streams within the project area provides reasonable assurance that yarding will be carried out consistent with the standards of 11 AAC 95.360(a). 6-3

As presented in Appendix B of the DEIS, the Soils section on all but eight of the unit cards simply states "none," apparently indicating that no concerns exist and that site-specific yarding or silvicultural prescriptions are not necessary to minimize soil disturbance and reduce the risk of mass wasting. However, given the amount of harvesting that is proposed on high hazard soils, it would appear that this is not the case. According to Table Water-2 (DEIS page 3-40), between 362 to 372 acres of "high hazard" soils are proposed for harvesting, depending on alternative. In particular, Alternative B proposes harvesting on 367 acres of high hazard soils, the vast majority of which will be done using cable yarding and clearcut or clearcut with reserves silvicultural prescriptions. Consequently, it is apparent that site-specific measures will be needed to ensure the maintenance of slope stability during and subsequent to harvesting operations. Since it was not done for the DEIS, the Soils section on the unit cards for the FEIS should narratively describe the measures that will be taken to minimize soil disturbance and reduce the risk of mass wasting in these steep units.

In addition, in order to be fully consistent with the information requirements of 11 AAC 95.220(a)(9), all areas of known unstable or slide-prone slopes, and those areas with slope gradients greater than 67 percent that are located in cutting units or are traversed by roads must be displayed on the unit and road card maps. This information must be included on the unit and road card maps for the FEIS, as technically, the omission of this information is inconsistent with the standards of the ACMP.

Road Cards

The road cards and the orthophoto maps for this DEIS are a vast improvement over those that had been produced for previous timber sale DEISs. In particular, the maintenance and closure strategies that they describe are straightforward, unambiguous, and clearly indicate how the roads will be managed following completion of this timber sale. Most importantly, however, they are reasonably achievable and demonstrate that the proposed maintenance and closure methods can be accomplished consistent with the standards of 11 AAC 95.315 (road maintenance) and 11 AAC 95.320 (road closure).

Wildlife Information

Only 20 unit cards out of 71 have any wildlife comments recorded. All of those comments were singularly related to high value marten habitat for a total of 274 acres. No other general wildlife comments or species are recorded on any unit card. However, Chapter 3 discusses Sitka black-tailed deer under Wildlife (3-13) and Subistence (3-99) as an important management indicator species as both a game and subsistence species. Yet the Preferred Alternative B proposes the greatest reduction in high-value deer habitat without any site specificity denoted on the unit cards. 100% of the unit cards listed no "Pertinent Resource Information" for wildlife other than marten. Therefore, 72% of all unit cards simply listed "none" under the wildlife heading, making our review of the unit cards rather useless. Since it was not done for the DEIS, the Wildlife section on the unit cards for the FEIS should describe pertinent wildlife resource information and the measures that will be taken to minimize impacts to those species/habitats. In sharp contrast, the Vegetation and Streamcourse Protection information was well done.

11-10

Crab Bay Log Transfer Facility

The proposed Crab Bay Log Transfer Facility has been in review per the Alaska Coastal Management Program under the number AK 9502-07JJ. This review was initiated on February 16, 1995, and a proposed consistency determination was issued on May 22, 1995. The review clock was then stopped per a USFS request, in order to resolve issues related to the facility, specifically an operations timing restriction during herring spawning season. The USFS informed us in a March 5, 1997 meeting that the proposed design of the LTF might be changed from a rail slide to a drive down ramp or a barge facility. We mailed a letter on the subject to Gerry Schauwecker, requesting that the USFS contact DGC when the USFS came up with a new project design and description for the facility. We never received a response to our request. Another meeting was held on May 20, 1997, although consensus still could not be reached on the herring issue. John Sherrod stated that the USFS would make a decision regarding the design of the facility, then contact DGC. DGC has not heard from the USFS on this issue.

4-3

The DEIS indicates that a barge facility is proposed at the Crab Bay LTF site under Alternative B, and that a low-angle slide is proposed for this site under Alternatives D and F. The Department of Natural Resource, Division of Land, has informed us that a Tidelands Lease will be required for a facility at Crab Bay (there is an existing Easement Grant, which will expire May 2, 2000). A final consistency determination was never issued by DGC for the Crab Bay LTF. As such, the statement on page 3-67 of the DEIS "...the low angle slide at the mouth of Crab Bay (was) permitted in the spring of 1995 for the Southeast Chichagof timber sale(s)", is incorrect. This facility has not been found consistent with the ACMP.

Elevation

6-3

In addition, the Stream Crossings section of the cards is formatted to provide a substantial amount of valuable information. However, although the format is good, several pieces of important information are lacking on most of the cards. These include the type of structure to be used, the incision depth, channel bed width, gradient, and substrate at each crossing site, and fish passage requirements, timing dates, and the site-specific BMPs that will be implemented (the cards vary in the degree to which this information is provided). We can only assume that this is due to a lack of field review of each crossing site, as several of the cards indicate that additional fisheries and hydrology review is necessary prior to determining the types of crossing structures to be used.

However, although the crossing structure section is blank on many of the site-specific stream crossing descriptions, the incision depths that are shown for some sites clearly indicate that bridges rather than culverts should be installed. Specifically, these include the following crossing sites:

11-10

Stream Crossing #	Channel Bed Width	Gradient	Incision Depth
76	20'	27%	72'
125	?	35%	75'
128	?	35%	75'
27	20'	27%	72'
28	20'	27%	72'
160	20'	27%	72'
166	20'	27%	72'
169	20'	27%	72'
12*	20'	27%	72'

(*the narrative for this crossing site states "Major recent debris torrent/slide down this channel is covering road = unstable. Need additional on-site hydrology review to determine proper structure.")

5	16'	9%	48'
6	20'	27%	72'
1	20'	27%	72'
2	20'	27%	72'
19	20'	27%	72'
26	20'	27%	72'

The channel bed widths, gradients, and incision depths at these crossing sites clearly warrant the installation of bridges, especially given the extremely large amounts of fill that would be required to install culverts. This is especially important for site #12, where a bridge would more effectively allow for bedload movement within the channel and ensure the integrity of the road prism at the crossing site.

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** Tom Paul, DFG, Juneau
 ** Jim McAllister, DNR, Juneau
 * Judith Bitner, DNR/SHPO, Anchorage
 Buck Lindekugel, SEACC, Juneau
 Tom Waldo, SCLDF, Juneau
 Page Else, Sitka Conservation Society

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You must respond within five calendar days of your receipt of this proposed finding to indicate whether you concur with this finding. If you, the applicant, are not prepared to concur within the five-day period, you may either:

- (a) request an extension of the review schedule pursuant to 6 AAC 50.110(b)(8) if you need more time to consider this finding, or
- (b) request that the State reconsider this finding, by submitting a written statement requesting "elevation" of the finding, describing your concerns, and proposing an alternative consistency finding. This alternative finding must demonstrate how your project is consistent with the referenced standards of the ACMP and district policies.

Other review participants with elevation rights pursuant to 6 AAC 50.070(j) may also request an elevation if they submit the information required in (b) above to me within five calendar days of receipt of the proposed finding.

Please be advised that although the State has found the project consistent with the ACMP, based on your project description and any stipulations contained herein, you are still required to meet all applicable State and federal laws and regulations. Your consistency finding may include reference to specific laws and regulations, but this in no way precludes your responsibility to comply with other applicable laws and regulations.

If changes to the approved project are proposed prior to or during its siting, construction, or operation, you are required to contact this office immediately to determine if further review and approval of the revised project is necessary. If the actual use differs from the approved use contained in the project description, the State may amend this consistency finding.

Should cultural or paleontological resources be discovered as a result of this activity, we request that work which would disturb such resources be stopped, and that the State Historic Preservation Office be contacted immediately (269-8720).

If you have any questions regarding this process, I can be reached at (907) 465-3177, or email Jennifer_Garland@gov.state.ak.us.

Sincerely,



Jennifer R. Garland
 Project Review Coordinator

Cc:
 ** Kevin Hanley, DEC, Juneau
 ** Moira Ingle, DFG, Klawock
 ** Bill Hanson, DFG, Juneau

Finger Mountain Timber Sale DEIS	7	February 22, 2000	NEPA & CWA Section 319 Comments Received From ADEC	8	February 22, 2000
Clearcutting as the Predominant Silvicultural Prescription:			Forest Plan has designated as unsuitable and not available for timber production (i.e., harvesting is not allowed).		
We were surprised and somewhat disappointed at the extent to which clearcutting is prescribed for Alternatives B and D, particularly since one of the Forest Plan's objectives for Modified Landscape and Timber Production LUDs is to "seek to reduce clearcutting when other methods will meet land management objectives." Other than the reduced size of this timber sale, the overall design of these alternatives is one which predates the 1997 TLMP revision.			For example, Table Water-2 indicates that 362 to 372 acres of "high hazard" soils will be harvested, depending on alternative. However, it is unclear whether these acres include MM14 soils as, according to the footnote in this table (and in Tables Water-1 and Water-3), "High hazard soils are those that are either MMHAZ 3 or MMHAZ 4 [MM14] in the CLU cover in the GIS database." In addition, in discussing the Soil and Water BMPs and standards and guidelines, the DEIS (page 3-39) states that "Some of the practices they require include the following: eliminating most areas containing extreme hazard soils (most mineral soils on slopes over 72 percent, and some on slopes over 60 percent) from consideration for harvest or road construction" (emphasis added), and "Eliminating roads in these areas by selecting helicopter harvest systems." Consequently, these statements appear to indicate that at least some areas of MM14 soils are proposed for harvesting in this project. If this is the case, then to be consistent with the Forest Plan, all such areas must be deleted from harvest consideration, regardless of the silvicultural and yarding systems prescribed.		
Although the DEIS (pages Summary-4 and 2-4) states that "Harvest systems other than clearcutting are prescribed for 78 to 97 percent of the harvest units," other information presented in the DEIS clearly contradicts this. According to Table Summary-1 and the unit summary tables in Appendix B, even-aged management (clearcutting and clearcutting with reserves) is prescribed for 99 percent of the acres to be harvested under Alternative B, and 84 percent of the acres to be harvested under Alternative D. Alternative F, which proposes even-aged management on 29 percent of the acres, is the only alternative that comes close to the harvest system percentages that the DEIS says are prescribed by the alternatives.			Documentation of the Analyses for Allowing Harvest on Slopes Greater than 72 Percent:		
Since the preferred alternative is not a decision but only a recommendation, we would hope that a less invasive alternative will be selected for the Record of Decision (ROD). Of the three action alternatives presented in the DEIS, Alternative F is clearly the least impacting in terms of potential negative effects to water quality and fish habitat. Some of the benefits of this alternative include: it constructs no new specified road and only 4.3 miles of temporary road; it minimizes the amount of clearcutting and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; it involves the least number of fish bearing, non-fish bearing, and sensitive stream crossings (Table Water-6); it proposes the fewest miles of road construction on high hazard soils, all of which are temporary roads that will be closed following harvest completion; it avoids harvesting in the Inbetween Creek watershed and the need for constructing and using a new LTF there; and it constructs the fewest miles of road on wetlands. In addition, Alternative F is also the most economically viable of the three action alternatives (DEIS, page 3-63 and Table Silv/Tim-8). Consequently, we highly recommend that it be selected as the final alternative for the ROD. If Alternative F is selected, and harvesting is deferred in the Inbetween Creek watershed, then the existing road system in this drainage should either be effectively closed or inventoried, as the DEIS (page 3-46) describes, with the "removal or repair of structures or road segments identified as resource concerns."			The DEIS (page 2-3) indicates that on-site analyses were completed by a soil scientist within potential harvest units containing slopes greater than 72 percent; however, no documentation of those analyses is presented other than the statement that "Areas with a high level of risk were deleted from the unit pool. Harvest prescriptions in the steepest remaining units have been changed to individual tree selection with reserve areas; this would maintain sufficient root strength to reduce the risk of landslides to these sites." In addition, no indication is provided as to where (in which units) these steep slopes occur.		
Harvesting on MM14 Soils:			According to the TPIT clarification on this issue, "To document the analysis for allowing the harvest the following Checklist should be used:		
According to the DEIS (page 2-2), "All action alternatives including the proposed action are consistent with the modified 1997 Forest Plan. All applicable forest-wide and land use designation standards and guidelines are incorporated." However, it appears that harvesting is proposed on areas of MM14 (very high mass movement index) soils, which the			Sleepness: Dissection: Parent Material: Drainage: Potential impacts on downstream beneficial uses:		

NEPA Comments Received from DFG

General Comments:

We are extremely disappointed to find that few of the comments or requests made in our revised scoping comments of June 1999 have been acknowledged or appear to be included in the DEIS or its preparation. Two of those items relate to implementing TLMP. We will reiterate those comments here and our observations on the Forest Service response.¹

From the perspective of fish and wildlife, the preferred alternative has little to recommend it compared to the other action alternatives. We strongly recommend that the Forest Service select Alternative F for the Record of Decision for this project for the following reasons: (1) it minimizes the amount of clearingcut and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; (2) it minimizes the reduction of high value deer and marten habitat; (3) it minimizes construction of new roads that can be detrimental to fish, an important resource for bears and other wildlife; (4) it avoids harvesting in the Inbetween Creek watershed. It also appears to be the most economically viable of the three action alternatives.

Review of Small Old-Growth Habitat LUDs:

11-3

Revised Scoping comment: *"We urge the Forest Service to involve ADF&G and the U.S. Fish and Wildlife Service in an interagency review of the small old growth reserves in the project area as directed in the 1997 TLMP Revision ROD and reiterated in the 1999 ROD. This review should occur as early as possible in project planning. As an initial step, the Forest Service needs to provide information on acreage and composition of the existing mapped small OGRs to determine if they meet minimum TLMP standards and guidelines. At this point we do not anticipate recommending changes to the existing locations but the review needs to be done."*

We understand that the Forest Service has discussed and reviewed the small old-growth habitat LUDs with the U.S. Fish and Wildlife Service but it has not included ADF&G in this review. The 1997 TLMP ROD (page 33) explicitly mentions that state agencies need to be included in an interagency review of the location of the small old-growth habitat LUDs during project planning. This requirement was not changed by the 1999 Revised TLMP ROD. In addition, ADF&G has been an integral member of the Tongass Plan Implementation Team (TPIT). In August 1998, after extensive work by TPIT, the Forest Supervisor issued a series of Clarification Papers. The first of these is titled: *Small Old-Growth Habitat Reserve Evaluation Process*. Key personnel from the Chatham Area participated as members on TPIT in crafting the document.

We do not understand why the Chatham Area has repeatedly failed to include ADF&G in these reviews as required by Forest Service policy. Sale planners in other areas and Ranger Districts of the Tongass have willingly and promptly included ADF&G throughout their reviews and beginning early in the planning process. We note that this requirement is not limited to small old-growth habitat LUDs that do not meet the minimum criteria for such reserves. The review applies to all small reserves associated with new project planning.

If the analysis is undertaken prior to the signing of the ROD, then the approval (if approved) should be located in the ROD and FEIS. If the information is not available prior to the signing of the NEPA document, then it should be located in the Change Analysis (documentation of changes made between the ROD and on-the-ground activities)." Although this harvesting has yet to be approved, the analyses have already been completed and, therefore, the results should have been documented in the DEIS. However, since they were not, the analyses should be summarized in the FEIS, with those areas of slopes greater than 72 percent displayed on the unit cards.

6-3

Log Transfer Facilities:

The discussion of proposed Log Transfer Facilities (LTFs) on pages 3-67 and 3-68 of the DEIS is very weak and lacks any site-specific information regarding the bathymetry of the LTF sites, their flushing capabilities, the current biological productivity and species diversity at the sites, and the amount and extent of existing bark accumulations from previous log transfer activities. This information needs to be included in the FEIS for this project, along with a discussion of the anticipated effects of the proposed log transfer facilities on intertidal and subtidal habitats, and the mitigation measures that will be used to minimize the loss of bark and its accumulation on the benthic substrate.

4-2

In addition, it is unclear as to whether the existing Inbetween LTF site was previously used, and why a different site is proposed for the Finger Mountain project. For example, Page 2-3 of the DEIS indicates that the existing LTF was a "previously used facility;" however, page 3-67 states that *"The temporary drive-down ramp at Inbetween, and the low angle slide at the mouth of Crab Bay were permitted in the spring of 1995 for the Southeast Chichagof timber sale(s). They were not built because the timber sales were not harvested"* (emphasis added). The map for Alternative A shows an existing road that terminates at salt water on Tenakee Inlet. Therefore, we assume that this site was, in fact, previously used as an LTF. However, the DEIS provides no indication of existing bark accumulations from this prior use, nor does it explain why a new, unimpacted site is proposed for this project. Impacts from bark deposition should be localized and limited to existing sites where log transfer has previously occurred. Before impacting a new site, the Forest Service needs to justify why the existing site cannot be used.

4-2

In addition, the DEIS indicates that a barge facility is proposed at the Crab Bay LTF site under Alternative B, and that a low-angle slide is proposed for this site under Alternatives D and F. We strongly advocate the barging of logs in lieu of conventional inwater log transfer, and recommend that a barge facility be used at this site for all three alternatives. If barging is deemed feasible for Alternative B, then there is no reason why it can't be used for Alternatives D and F as well.

4-1

Maps:

The DEIS maps were of generally poor quality due to missing elements needed for analysis. The chief element missing from the alternative maps is depiction of productive old growth as well as harvest units. Mapping old growth on a separate "Existing Condition" maps as this DEIS does is not adequate. This practice is a throwback to EISs of several years ago, which showed only harvest units on an otherwise blank map. Failure to include existing old growth on alternative maps makes it impossible to determine the effect of the alternatives on the forested landscape. The existing condition map does not distinguish between types of old growth, lumping all productive old growth together. This ignores years of interagency wildlife research that has shown that because of different elevation, aspect, volume class, vegetation type, etc. all old growth is not the same with respect to wildlife. Maps of existing condition and alternatives without contour lines, proposed harvest units, old growth delineated by strata or some other distinguishing characteristic are useless in evaluating a project's effects on the forest type mosaic, wildlife habitat, corridors, and other resource concerns. Recent Chatham Area project teams have apparently decided not to include high-quality maps for projects that are the normal review materials in all other areas and districts in the Tongass National Forest.

Alternatives to Clearcutting:

1-5 Revised Scoping comment: "We recommend that alternatives to clearcutting be used on this project as much as possible. Recent ADF&G research has found that selection logging that removes small numbers of trees (<30 per ha) distributed evenly throughout the unit (1-6 trees per 0.2 ha) can be quite effective in maintaining high quality winter habitat for deer while improving stand growth and yield. (See "Effects of selection logging on deer habitat in Southeast Alaska: a retrospective study" by M.D. Kirchner and R. G. Thomson, *Federal Aid in Wildlife Restoration, Research Final Report, June 1998*, ADF&G, Juneau. 37 pp.)"

For all the attention given in the narrative to alternative silviculture there seems to be very little significant alternative silviculture actually proposed for this sale. We note that the preferred alternative (B) uses clearcutting for all harvest units except for portions of a few units where marten standards and guidelines are prescribed. Even-aged management (clearcutting and clearcutting with reserves) is prescribed for 99 percent of the acres to be harvested under Alternative B, and 84 percent of the acres to be harvested under Alternative D. Alternative F, which proposes even-aged management on 29 percent of the acres, is the only alternative that comes close to the harvest system percentages that the DEIS says are prescribed by the alternatives. If one looks at the percentage of sale volume in this project harvested by alternatives to clearcutting, the use of alternative silviculture is quite low overall, despite the high-profile given in it the EIS.

The term "two-aged" management is unclear within this DEIS. On one hand p. 3-55 says two-aged management differs from even-aged management based on the distribution of the trees remaining in the harvest unit. Yet it also says that "clearcut with reserves" is the two-aged prescription proposed for this project. "Reserves" implies groups of trees not evenly distributed throughout a unit. "Clearcuts with reserves" is not an alternative to clearcutting unless the reserve trees are widely dispersed. Leaving an "island of trees" results in essentially, a patch of

9-1

old-growth surrounded by a clearcut. Moving these "reserves" to the backline of the cutting unit (the most likely placement from an operations standpoint), would result in a clearcut that is just a little smaller than it might otherwise be. The Forest Service needs to specify how the clearcut with reserves treatment will actually be applied before it can be claimed to be two-aged management.

9-1

While the preferred alternative is only a recommendation, we would hope that a less invasive alternative would be selected for the Record of Decision (ROD). Of the three action alternatives presented in the DEIS, Alternative F clearly minimizes the potential negative effects to water quality, fish habitat, and high value deer and marten habitat. Some of the benefits of this alternative include: (1) it constructs a new specified road and only 4.3 miles of temporary road; (2) it minimizes the amount of clearcutting and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; (3) it involves the least number of fish bearing, non-fish bearing, and sensitive stream crossings (see Table Water-6); (4) it proposes the fewest miles of road construction on high hazard soils (all of which are temporary roads that will be closed following harvest completion); (5) it avoids harvesting in the Inbetween Creek watershed and the need for constructing and using a new LTP there; and (6) it constructs the fewest miles of road on wetlands. In addition,

7-3

Alternative F is also the most economically viable of the three action alternatives (DEIS, page 3-463 and Table Silv/Tim-8). Consequently, we highly recommend that it be selected as the final alternative for the ROD. If Alternative F is selected, and harvesting is deferred in the Inbetween Creek watershed, then the existing road system in this drainage should either be effectively closed or inventoried, as the DEIS (page 3-46) describes, with the "removal or repair of structures or road segments identified as resource concerns."

Brown bear buffers:

Revised Scoping comment: "Streams should be surveyed for important brown bear foraging sites. Where these are found, 500-foot buffers need to be established to protect them. ADF&G needs to be consulted in identifying and managing these sites as specified by TLMP Standards and Guidelines."

1-3

The DEIS gives no indication that this has been done. It refers to a brief meeting in February 1999 with ADF&G staff at which "no specific issues were identified with the placement of units in any alternative." (pg. 3-21). This was a very preliminary project meeting prior to revised scoping for the project. Our revised scoping comments were made after that meeting. We have had no other involvement with project planners on this issue. A memo from Forest Supervisor Brad Powell to Tongass Leadership on 7 August 1998 titled, "Tongass Forest Plan Implementation Clarification Papers", mandates a process for evaluating brown bear foraging sites as to their need for 500-foot buffers. ADF&G had considerable input in developing this protocol and we understood it would be implemented in all projects under TLMP. That process is provided here.

1) "Identify Class I streams supporting spawning salmon (salmon streams) within the analysis area;

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<p>2) Of these salmon streams, delineate those stream segments classified as Moderate Gradient/Mixed Control and Flood Plain process groups.</p> <p>3) Apply the TLMF Riparian Standards and Guidelines to the salmon streams and identify segments that are protected by a 500' wide or greater protective buffer on both sides of the salmon stream.</p> <p>4) Along segments of salmon streams not protected in 3 above, visit the area looking for evidence of brown bear use. If time, funding or other factors limit the time in the field, focus work on the Moderate Gradient/Mixed Control and Flood Plain process group reaches of the stream.</p> <p>a. Fish or wildlife biologists with experience in brown bear habitat should visit and walk salmon spawning habitats along streams after the peak of salmon run.</p> <p>b. Examine the number of brown bear trails and resting sites along a given length of stream. Areas that are important to brown bears will have extensive trail systems often connecting the stream to nearby hills and bluffs overlooking the lower elevation riparian zone. The understory vegetation in these areas will usually be trampled by extensive bear activity.</p> <p>5) Record field observations on aerial photos and maps. If ADF&G personnel did not take part in the fieldwork, consult with the local Habitat and/or Wildlife Conservation biologist to see if they can provide any additional information. Consultation with ADF&G and others will be especially important for project areas on the mainland."</p> <p>This process needs to be implemented in the Finger Mountain project area and ADF&G needs to be informed of the results and consulted in evaluating the need for buffers. The results of the work also need to be included in summary narrative in the Final EIS.</p> <p><u>Subsistence:</u></p> <p>The VCU's within this timber sale are all rated in the highest sensitivity to disturbance of subsistence uses by the Tongass Fish and Wildlife Resource Assessment (ADF&G 1998). Subsistence should receive heavy weight in considering the effects of the sale on forest users.</p> <p><u>ADF&G research:</u></p> <p>ADF&G has conducted extensive research on marten and brown bears on Chichagof Island for many years. The department has spent approximately \$1,000,000 on research that has been focused on the habitat needs of these species and was conducted in part to assist Forest Service planners, managers, and decision-makers to better manage natural resources. Although the research did not occur in the immediate Finger Mountain project area, the findings and results are applicable to understanding the needs of wildlife in the project area. As in the recent Indian River EIS, the Finger Mountain DEIS makes no reference to those projects and does not cite any of the numerous progress reports published by the researchers. This leads us to believe the findings of those studies have been ignored in the preparation and planning of this project.</p>	1-3		<p><u>Brown Creeper:</u></p> <p>After correctly stating that brown creepers require large trees and large volume forest, the DEIS narrative on brown creeper (pp.3-22, 23) states that after harvest "at least 31,885 acres of unharvested productive old-growth forest would remain in the project area" implying that any remaining forest would suffice as creeper habitat. To be relevant to the discussion of brown creepers the DEIS needs to reveal how many acres of forest greater than 30,000 board feet per acre will be remaining. As with the maps, the DEIS seems to be implying that all old growth is the same with respect to wildlife.</p> <p><u>Harvesting on MM14 (very high mass movement index) Soils:</u></p> <p>According to the DEIS (page 2-2), "All action alternatives including the proposed action are consistent with the modified 1997 Forest Plan. All applicable forest-wide and land use designation standards and guidelines are incorporated." However, it appears that harvesting is proposed on areas of MM14 (very high mass movement index) soils, which the Forest Plan has designated as unsuitable and not available for timber production (i.e., harvesting is not allowed).</p> <p>Table Water-2 indicates that 362 to 372 acres of "high hazard" soils will be harvested, depending on alternative. It is unclear whether these acres include MM14 soils as, according to the footnote in this table (and in Tables Water-1 and Water-3), "High hazard soils are those that are either MMHAZ 3 or MMHAZ 4 [MM14] in the CLU cover in the GIS database." In addition, in discussing the Soil and Water BMPs and standards and guidelines, the DEIS appears to indicate that at least some areas of MM14 soils are proposed for harvesting in this project. If this is the case, then to be consistent with the Forest Plan, all such areas must be deleted from harvest consideration, regardless of the silvicultural and yarding systems prescribed.</p> <p><u>Log Transfer Facilities:</u></p> <p>The discussion of proposed Log Transfer Facilities (LTFs) [pages 3-67 and 3-68] lacks substance and does not provide site-specific information regarding the bathymetry of the LTF sites, flushing capabilities, current biological productivity and species diversity at the sites, or the amount and extent of existing bark accumulations from previous log transfer activities. This information needs to be included in the FEIS for this project, along with a discussion of the anticipated effects of the proposed log transfer facilities on intertidal and subtidal habitats, and the mitigation measures that will be used to minimize the loss of bark and its accumulation on the benthic substrate.</p> <p>In addition, it is unclear whether the existing Inbetween LTF site was previously used, and why a different site is proposed for the Finger Mountain project. For example, Page 2-3 indicates that the existing LTF was a "previously used facility," however, page 3-67 states that "The temporary drive-down ramp at Inbetween, and the low angle slide at the mouth of Crab Bay were permitted in the spring of 1995 for the Southeast Chichagof timber sale(s).</p>	1-7	

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February 22, 2000

MARTEN LEAVE-TREE MONITORING PROJECT**Nemo Loop Timber Sale****Unit 3****Review**

The Nemo Loop Timber Sale Environmental Assessment was prepared by the Wrangell Ranger District in 1998 and implemented the new Forest Plan standards for designating marten leave trees (see pg. 4-118 of the 1997 Forest Plan or TLMP 1998 Implementation Policy For Marten pp. 11-13 for description). To meet these standards we attempted to leave seven standing trees/acre within high value marten habitat. High value marten habitat is defined as high volume strata below 1500 feet in elevation. Due to the difficulty in leaving trees within cable units, most leave trees were "clumped" rather than "dispersed". We chose to mark individual trees for most units rather than attempt to achieve the objective through an upper diameter limit.

In the Fall of 1999 the interdisciplinary team conducted an on-site monitoring review field trip of the Nemo project area. On this trip we could not determine whether or not the marten standards had been achieved. To assist in this determination, a wildlife technician followed up with a visit to Unit 3 to tally standing trees of 20" dbh (diameter-breast-height). No attempt was made to tally the number of large downed trees since this was assumed to meet the standards. This report is to summarize these findings (see attached write-up and spreadsheet) and our subsequent discussions with a timber layout representative and sale administrators.

We did not meet the marten standard for Unit 3 but retained 82-95% of the standing trees required (33 acres of this 37 acre unit quality as "high value habitat"). Our greatest discrepancy was between the number of standing decadent required and the number of standing decadent trees tallied as remaining in the unit (99 vs. 58). At least 10 leave trees were removed during harvesting but all (except for one) were replaced by a similar size/species of tree within the unit according to the sale administrators. At least nine leave trees blew down either during or after harvesting. The operator chose to helicopter this unit even though it was designed for cable logging.

11-5**Issues with marking leave trees**

There is some confusion in interpreting the marten standards. One question is whether we are required to meet seven standing trees per acre and 10-20% of existing stand structure. During marking it is difficult to determine if the 10-20% standard has been met and answering this question may depend on the number of stand plots.

We intentionally marked trees that were adjacent to the unit boundary and marked trees in clumps for operational reasons. Implementation policy states that when clumping... "retain 10% or more of the original stand structure in the openings between clumps". This does not appear to be met in Unit 3. We do not know how it is possible to meet this standard/guideline for a conventional cable unit. In addition, individual trees would be highly susceptible to windthrow in this unit. Individual trees large enough to withstand wind forces become a safety concern to the operator.

Finger Mountain Timber Sale DEIS

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They were not built because the timber sales were not harvested" (emphasis added). The map for Alternative A shows an existing road that terminates at salt water on Tenakee Inlet. Therefore, we assume that this site was, in fact, previously used as an LTF. However, the DEIS provides no indication of existing bark accumulations from this prior use, nor does it explain why a new, unimpacted site is proposed for this project. Impacts from bark deposition should be localized and limited to existing sites where log transfer has previously occurred. Before impacting a new site, the Forest Service needs to justify why the existing site cannot be used.

4-2**4-3**

The DEIS proposes a barge facility at the Crab Bay LTF site under Alternative B, but that a low-angle slide is proposed for this site under Alternatives D and F. We strongly advocate the barging of logs in lieu of conventional inwater log transfer, and recommend that a barge facility be used at this site for all three alternatives. It would seem reasonable to assume that if barging is considered for Alternative B, it should also be applied in Alternatives D and F.

4-1

DFG has requested that the following project report (Marten Leave Tree Monitoring Project, see next page), dealing with the issue of marten monitoring, be attached as an addendum to their NEPA comments. As such, Peg Robertson's (USFS Wrangell Biologist) review of a portion of a timber sale where the latest marten standards and guidelines were employed is attached. The FS should improve implementation and monitoring of the marten standards and guidelines in light of the problems encountered in the Wrangell Ranger District. DFG requests that the USFS document the TLMP implementation and implementation monitoring in the Finger Mountain sale.

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The timber crew marked 270 trees during their cruise but we were only able to find 190 trees (post-harvest) that met the standard. One reason for this may be the use of visual estimates of dbh during the marking process. There may be a number of trees slightly below the 20" dbh cutoff point that were marked as leave trees. If this is the technique employed in the future we may need to mark more (>20%) of the trees required to account for observer error, blowdown, etc. It would also be beneficial to record the dbh of all leave trees during the marking process for later comparisons.

We have heard different opinions on the level of biologist input that is necessary to mark trees. For some sales we are considering asking the purchaser to designate leave trees. Based on these results and the recommendation of those involved with layout for Nemo we recommend a high level of biologist input during the marking process. Likewise, it would be appropriate for the sale administrators to consult with a biologist in situations where the operator decides that a leave tree needs to be removed.

Issues with monitoring

We know of no existing protocol for monitoring whether or not the marten standard and guideline is being implemented correctly. Finding marked trees in a harvested unit is difficult due to the amount of debris and we assume there is error in the numbers provided for this report. Based on this small effort we give the following recommendations:

- Assign different individuals or teams to collect data for the same unit and compare the results for consistency.
- Use more people. One suggestion was to send a team of four people with paint to tally trees (for a unit of approximately the same size).
- Monitor more units. This will take a fair amount of time and effort. Field work for this project involved three days of work for one technician on a 33 acre unit.
- Ask a layout person to participate with monitoring. Use pre-harvest maps and numbers.
- Tally the leave trees less than 20" dbh and the number of downed logs > 20" dbh to address more monitoring questions.

Prepared by: *Peg Robertsen*
Date: *November 12th, 1999*

Thanks to Doug Clark for his assistance in collecting and summarizing this information. Thanks to Rich Mendoza, Tyler Gumm, Mark Pempek, Ben Case, Steve Brady and Julianne Thompson for their suggestions and edits.

STATE OF ALASKA

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

3 SOUTH CENTRAL REGIONAL OFFICE
550 W. 7TH AVENUE, SUITE 1650
ANCHORAGE, ALASKA 99501
PH: (907) 269-3600/FAX: (907) 269-3981

27 CENTRAL OFFICE
P.O. BOX 10030
JUNEAU, ALASKA 99811-0030
PH: (907) 465-3662/FAX: (907) 465-3075

TONY KNOWLES, GOVERNOR

PIPELINE COORDINATOR'S OFFICE
ANCHORAGE, ALASKA 99501-2343
PH: (907) 271-4317/FAX: (907) 272-2680

March 2, 2000

Ms. Lisa Winn, Team Leader
U.S. Forest Service
204 Sigirakka Way
Sitka, AK 99835

Dear Ms. Winn:

SUBJECT: FINGER MOUNTAIN TIMBER SALE DEIS
State ID No. AK 0001-051J
FINAL CONSISTENCY FINDING

The Division of Governmental Coordination (DGC) has coordinated the State's review of the U.S. Forest Service's consistency determination for the proposed Finger Mountain Timber Sale. The FS found the activity consistent, to the maximum extent practicable, with the Alaska Coastal Management Program (ACMP). A proposed consistency finding was issued on February 22, 2000.

The USFS has identified Alternative B as the Preferred Alternative and Proposed Action for this timber sale. This alternative proposes the harvest of approximately 936 acres of forest land, producing approximately 21.4 MMBF of timber. New specified road construction would be 9.86 miles, reconstructed road would total 13.4 miles, and 10.9 miles of temporary roads would be constructed.

The Forest Service, DGC and other state agencies have worked very hard to develop an MOU that addresses information needs for ACMP review of Forest Service timber sales. This MOU was signed on February 16, 2000. While the MOU had not yet been signed during development of the Finger Mountain DEIS, and was not binding on any of the parties at that time, it would have been helpful if the information needs listed in the Draft MOU had been followed and provided in the DEIS.

This final consistency finding, developed under 6 AAC 50, applies to the federal consistency determination required for the project per 15 CFR 930 Subpart C. The following comments are offered pursuant to 6 AAC 50 of the ACMP. We find the project consistent, subject to the

specifications listed below. ACMP (FPA) standards are cited where applicable. NEPA, and Clean Water Act Section 319 comments are also attached to this finding.

ACMP Consistency Finding:

Unit Cards

We appreciated the depiction of the windfirm management zones on the unit card maps, as well as the narrative descriptions of the methods that will be used to provide reasonable assurance of windfirmness for the process group buffers that will be retained along all Class I, II, and III streams in the project area. It would have been helpful if the Soils section on all of the cards included information regarding slope steepness and suspension objectives, or other mitigation measures such as silvicultural prescriptions that will be used to minimize soil disturbance and maintain slope stability during and subsequent to yarding operations. The full implementation of the TLMP process group standards and guidelines (RIP2.III.E) along all Class I, II, and III streams within the project area provides reasonable assurance that yarding will be carried out consistent with the standards of 11 AAC 95.360(a).

As presented in Appendix B of the DEIS, the Soils section on all but eight of the unit cards simply states "none," apparently indicating that no concerns exist and that site-specific yarding or silvicultural prescriptions are not necessary to minimize soil disturbance and reduce the risk of mass wasting. However, given the amount of harvesting that is proposed on high hazard soils, it would appear that this is not the case. According to Table Water-2 (DEIS page 3-40), between 362 to 372 acres of "high hazard" soils are proposed for harvesting, depending on alternative. In particular, Alternative B proposes harvesting on 367 acres of high hazard soils, the vast majority of which will be done using cable yarding and clearcut or clearcut with reserves silvicultural prescriptions. Consequently, it is apparent that site-specific measures will be needed to ensure the maintenance of slope stability during and subsequent to harvesting operations. Since it was not done for the DEIS, the Soils section on the unit cards for the FEIS should narratively describe the measures that will be taken to minimize soil disturbance and reduce the risk of mass wasting in these steep units.

In addition, in order to be fully consistent with the information requirements of 11 AAC 95.220(a)(9), all areas of known unstable or slide-prone slopes, and those areas with slope gradients greater than 67 percent that are located in cutting units or are traversed by roads must be displayed on the unit and road card maps. This information must be included on the unit and road card maps for the FEIS, as technically, the omission of this information is inconsistent with the standards of the ACMP.

Road Cards

The road cards and the orthophoto maps for this DEIS are a vast improvement over those that had been produced for previous timber sale DEISs. In particular, the maintenance and closure strategies that they describe are straightforward, unambiguous, and clearly indicate how the roads will be managed following completion of this timber sale. Most importantly, however, they are reasonably achievable and demonstrate that the proposed maintenance and closure methods

can be accomplished consistent with the standards of 11 AAC 95.315 (road maintenance) and 11 AAC 95.320 (road closure).

In addition, the Stream Crossings section of the cards is formatted to provide a substantial amount of valuable information. However, although the format is good, several pieces of important information are lacking on most of the cards. These include the type of structure to be used, the incision depth, channel bed width, gradient, and substrate at each crossing site, and fish passage requirements, timing dates, and the site-specific BMPs that will be implemented (the cards vary in the degree to which this information is provided). We can only assume that this is due to a lack of field review of each crossing site, as several of the cards indicate that additional fisheries and hydrology review is necessary prior to determining the types of crossing structures to be used.

However, although the crossing structure section is blank on many of the site-specific stream crossing descriptions, the incision depths that are shown for some sites clearly indicate that bridges rather than culverts should be installed. Specifically, these include the following crossing sites:

Stream Crossing #	Channel Bed Width	Gradient	Incision Depth
76	20'	27%	72'
125	?	35%	75'
128	?	35%	75'
27	20'	27%	72'
28	20'	27%	72'
160	20'	27%	72'
166	20'	27%	72'
169	20'	27%	72'
12*	20'	27%	72'

(*the narrative for this crossing site states "Major recent debris torrent/slide down this channel is covering road = unstable. Need additional on-site hydrology review to determine proper structure.")

Stream Crossing #	Channel Bed Width	Gradient	Incision Depth
5	16'	9%	48'
6	20'	27%	72'
1	20'	27%	72'
2	20'	27%	72'
19	20'	27%	72'
26	20'	27%	72'

The channel bed widths, gradients, and incision depths at these crossing sites clearly warrant the installation of bridges, especially given the extremely large amounts of fill that would be required to install culverts. This is especially important for site #12, where a bridge would more effectively allow for bedload movement within the channel and ensure the integrity of the road prism at the crossing site.

Wildlife Information

Only 20 unit cards out of 71 have any wildlife comments recorded. All of those comments were singularly related to high value marten habitat for a total of 274 acres. No other general wildlife comments or species are recorded on any unit card. However, Chapter 3 discusses Sitka black-tailed deer under Wildlife (3-13) and Subistence (3-99) as an important management indicator species as both a game and subsistence species. Yet the Preferred Alternative B proposes the greatest reduction in high-value deer habitat without any site specificity denoted on the unit cards. 100% of the unit cards listed no "Pertinent Resource Information" for wildlife other than marten. Therefore, 72% of all unit cards simply listed "none" under the wildlife heading, making our review of the unit cards for the FEIS should it was not done for the DEIS, the Wildlife section on the unit cards for the FEIS should describe pertinent wildlife resource information and the measures that will be taken to minimize impacts to those species/habitats. In sharp contrast, the Vegetation and Streamcourse Protection information was well done.

1-4

Crab Bay Log Transfer Facility

The proposed Crab Bay Log Transfer Facility has been in review per the Alaska Coastal Management Program under the number AK 9502-071J. This review was initiated on February 16, 1995, and a proposed consistency determination was issued on May 22, 1995. The review clock was then stopped per a USFS request, in order to resolve issues related to the facility, specifically an operations timing restriction during herring spawning season. The USFS informed us in a March 5, 1997 meeting that the proposed design of the LTF might be changed from a rail slide to a drive down ramp or a barge facility. We mailed a letter on the subject to Gerry Schauwecker, requesting that the USFS contact DGC when the USFS came up with a new project design and description for the facility. We never received a response to our request. Another meeting was held on May 20, 1997, although consensus still could not be reached on the herring issue. John Sherrod stated that the USFS would make a decision regarding the design of the facility, then contact DGC. DGC has not heard from the USFS on this issue.

4-3

The DEIS indicates that a barge facility is proposed at the Crab Bay LTF site under Alternative B, and that a low-angle slide is proposed for this site under Alternatives D and F. The Department of Natural Resource, Division of Land, has informed us that a Tidelands Lease will be required for a facility at Crab Bay (there is an existing Easement Grant, which will expire May 2, 2000). A final consistency determination was never issued by DGC for the Crab Bay LTF. As such, the statement on page 3-67 of the DEIS "...the low angle slide at the mouth of Crab Bay (was) permitted in the spring of 1995 for the Southeast Chichagof timber sale(s)," is incorrect. This facility has not been found consistent with the ACMP.

Please be advised that although the State has found the project consistent with the ACMP, based on your project description and any stipulations contained herein, you are still required to meet all applicable State and federal laws and regulations. Your final consistency finding may include

reference to specific laws and regulations, but this in no way precludes your responsibility to comply with other applicable laws and regulations.

If changes to the approved project are proposed prior to or during its siting, construction, or operation, you are required to contact this office immediately to determine if further review and approval of the revised project is necessary. If the actual use differs from the approved use contained in the project description, the State may amend this final consistency finding.

Should cultural or paleontological resources be discovered as a result of this activity, we request that work which would disturb such resources be stopped, and that the State Historic Preservation Office be contacted immediately (269-8720).

This final consistency determination is a final administrative decision for purposes of Alaska Appellate Rules 601-612. Any appeal from this decision to the superior court must be made within 30 days of the date of this determination.

If you have any questions regarding this process, I can be reached at (907) 465-3177, or email Jennifer_Garland@gov.state.ak.us.

Sincerely,



Jennifer R. Garland
Project Review Coordinator

Cc:

** Kevin Hanley, DEC, Juneau
** Phil Mooney, DFG, Sitka
** Bill Hanson, DFG, Juneau
** Tom Paul, DFG, Juneau
** Jim McAllister, DNR, Juneau
** Rex Blazer, DGC, Juneau
** Judith Bittner, DNR/SHPO, Anchorage
** Teresa Woods, FWS, Juneau
** Buck Lindekugel, SEACC, Juneau
** Tom Waldo, SCLDF, Juneau
** Page Else, Sitka Conservation Society

NEPA & CWA Section 319 Comments Received From ADEC

Clearcutting as the Predominant Silvicultural Prescription:

We were surprised and somewhat disappointed at the extent to which clearcutting is prescribed for Alternatives B and D, particularly since one of the Forest Plan's objectives for Modified Landscape and Timber Production LUDs is to "seek to reduce clearcutting when other methods will meet land management objectives." Other than the reduced size of this timber sale, the overall design of these alternatives is one which predates the 1997 TLMP revision.

Although the DEIS (pages Summary-4 and 2-4) states that "Harvest systems other than clearcutting are prescribed for 78 to 97 percent of the harvest units," other information presented in the DEIS clearly contradicts this. According to Table Summary-1 and the unit summary tables in Appendix B, even-aged management (clearcutting and clearcutting with reserves) is prescribed for 99 percent of the acres to be harvested under Alternative B, and 84 percent of the acres to be harvested under Alternative D. Alternative F, which proposes even-aged management on 29 percent of the acres, is the only alternative that comes close to the harvest system percentages that the DEIS says are prescribed by the alternatives.

Since the preferred alternative is not a decision but only a recommendation, we would hope that a less invasive alternative will be selected for the Record of Decision (ROD). Of the three action alternatives presented in the DEIS, Alternative F is clearly the least impacting in terms of potential negative effects to water quality and fish habitat. Some of the benefits of this alternative include: it constructs no new specified road and only 4.3 miles of temporary road; it minimizes the amount of clearcutting and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; it involves the least number of fish bearing, non-fish bearing, and sensitive stream crossings (Table Water-6); it proposes the fewest miles of road construction on high hazard soils, all of which are temporary roads that will be closed following harvest completion; it avoids harvesting in the Inbetween Creek watershed and the need for constructing and using a new LTF there; and it constructs the fewest miles of road on wetlands. In addition, Alternative F is also the most economically viable of the three action alternatives (DEIS, page 3-63 and Table Silv/Tim-8). Consequently, we highly recommend that it be selected as the final alternative for the ROD. If Alternative F is selected, and harvesting is deferred in the Inbetween Creek watershed, then the existing road system in this drainage should either be effectively closed or inventoried, as the DEIS (page 3-46) describes, with the "removal or repair of structures or road segments identified as resource concerns."

Harvesting on MM14 Soils:

According to the DEIS (page 2-2), "All action alternatives including the proposed action are consistent with the modified 1997 Forest Plan. All applicable forest-wide and land use designation standards and guidelines are incorporated." However, it appears that harvesting is proposed on areas of MM14 (very high mass movement index) soils, which the

6-2

Forest Plan has designated as unsuitable and not available for timber production (i.e., harvesting is not allowed).

For example, Table Water-2 indicates that 362 to 372 acres of "high hazard" soils will be harvested, depending on alternative. However, it is unclear whether these acres include MM14 soils as, according to the footnote in this table (and in Tables Water-1 and Water-3), "High hazard soils are those that are either MMHAZ 3 or MMHAZ 4 [MM14] in the CLU cover in the GIS database." In addition, in discussing the Soil and Water BMPs and standards and guidelines, the DEIS (page 3-39) states that "Some of the practices they require include the following: eliminating most areas containing extreme hazard soils (most mineral soils on slopes over 72 percent, and some on slopes over 60 percent) from consideration for harvest or road construction" (emphasis added), and "Eliminating roads in these areas by selecting helicopter harvest systems." Consequently, these statements appear to indicate that at least some areas of MM14 soils are proposed for harvesting in this project. If this is the case, then to be consistent with the Forest Plan, all such areas must be deleted from harvest consideration, regardless of the silvicultural and yarding systems prescribed.

6-2

Documentation of the Analyses for Allowing Harvest on Slopes Greater than 72 Percent:

TLMP standard and guideline S&W112.1.A.5 states "At the Forest Plan level, slope gradients of 72% or more are removed from the tentatively suitable timber base due to high risk of soil mass movement and accelerated erosion of class IV channel systems. At the project planning level, the Forest Supervisor or District Ranger may approve timber harvest on slopes of 72% or more on a case-by-case basis, based on the results of an on-site analysis of slope and class IV channel stability and an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources."

The DEIS (page 2-3) indicates that on-site analyses were completed by a soil scientist within potential harvest units containing slopes greater than 72 percent; however, no documentation of those analyses is presented other than the statement that "Areas with a high level of risk were deleted from the unit pool. Harvest prescriptions in the steepest remaining units have been changed to individual tree selection with reserve areas; this would maintain sufficient root strength to reduce the risk of landslides to these sites." In addition, no indication is provided as to where (in which units) these steep slopes occur.

6-3

According to the TPJT clarification on this issue, "To document the analysis for allowing the harvest the following Checklist should be used:

- Sleepiness:
- Dissection:
- Parent Material:
- Drainage:
- Potential impacts on downstream beneficial uses:

If the analysis is undertaken prior to the signing of the ROD, then the approval (if approved) should be located in the ROD and FEIS. If the information is not available prior to the signing of the NEPA document, then it should be located in the Change Analysis (documentation of changes made between the ROD and on-the-ground activities)." Although this harvesting has yet to be approved, the analyses have already been completed and, therefore, the results should have been documented in the DEIS. However, since they were not, the analyses should be summarized in the FEIS, with those areas of slopes greater than 72 percent displayed on the unit cards.

6-3

Log Transfer Facilities:

The discussion of proposed Log Transfer Facilities (LTFs) on pages 3-67 and 3-68 of the DEIS is very weak and lacks any site-specific information regarding the bathymetry of the LTF sites, their flushing capabilities, the current biological productivity and species diversity at the sites, and the amount and extent of existing bark accumulations from previous log transfer activities. This information needs to be included in the FEIS for this project, along with a discussion of the anticipated effects of the proposed log transfer facilities on intertidal and subtidal habitats, and the mitigation measures that will be used to minimize the loss of bark and its accumulation on the benthic substrate.

4-2

In addition, it is unclear as to whether the existing Inbetween LTF site was previously used, and why a different site is proposed for the Finger Mountain project. For example, Page 2-3 of the DEIS indicates that the existing LTF was a "previously used facility;" however, page 3-67 states that "The temporary drive-down ramp at Inbetween, and the low angle slide at the mouth of Crab Bay were permitted in the spring of 1995 for the Southeast Chichagog timber sale(s). They were not built because the timber sales were not harvested" (emphasis added). The map for Alternative A shows an existing road that terminates at salt water on Tenakee Inlet. Therefore, we assume that this site was, in fact, previously used as an LTF. However, the DEIS provides no indication of existing bark accumulations from this prior use, nor does it explain why a new, unimpacted site is proposed for this project. Impacts from bark deposition should be localized and limited to existing sites where log transfer has previously occurred. Before impacting a new site, the Forest Service needs to justify why the existing site cannot be used.

4-3

In addition, the DEIS indicates that a barge facility is proposed at the Crab Bay LTF site under Alternative B, and that a low-angle slide is proposed for this site under Alternatives D and F. We strongly advocate the barging of logs in lieu of conventional inwater log transfer, and recommend that a barge facility be used at this site for all three alternatives. If barging is deemed feasible for Alternative B, then there is no reason why it can't be used for Alternatives D and F as well.

4-1

NEPA Comments Received from DFG

General Comments:

We are extremely disappointed to find that few of the comments or requests made in our revised scoping comments of June 1999 have been acknowledged or appear to be included in the DEIS or its preparation. Two of those items relate to implementing TLMP. We will reiterate those comments here and our observations on the Forest Service response.

From the perspective of fish and wildlife, the preferred alternative has little to recommend it compared to the other action alternatives. We strongly recommend that the Forest Service select Alternative F for the Record of Decision for this project for the following reasons: (1) it minimizes the amount of clearcutting and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; (2) it minimizes the reduction of high value deer and marten habitat; (3) it minimizes construction of new roads that can be detrimental to fish, an important resource for bears and other wildlife; (4) it avoids harvesting in the Inbetween Creek watershed. It also appears to be the most economically viable of the three action alternatives.

Review of Small Old-Growth Habitat LUDs:

11-3

Revised Scoping comment: "We urge the Forest Service to involve ADF&G and the U.S. Fish and Wildlife Service in an interagency review of the small old growth reserves in the project area as directed in the 1997 TLMP Revision ROD and reiterated in the 1999 ROD. This review should occur as early as possible in project planning. As an initial step, the Forest Service needs to provide information on acreage and composition of the existing mapped small OGRs to determine if they meet minimum TLMP standards and guidelines. At this point we do not anticipate recommending changes to the existing locations but the review needs to be done."

We understand that the Forest Service has discussed and reviewed the small old-growth habitat LUDs with the U.S. Fish and Wildlife Service but it has not included ADF&G in this review. The 1997 TLMP ROD (page 33) explicitly mentions that state agencies need to be included in interagency review of the location of the small old-growth habitat LUDs during project planning. This requirement was not changed by the 1999 Revised TLMP ROD. In addition, ADF&G has been an integral member of the Tongass Plan Implementation Team (TPIT). In August 1998, after extensive work by TPIT, the Forest Supervisor issued a series of Clarification Papers. The first of these is titled: Small Old-Growth Habitat Reserve Evaluation Process. Key personnel from the Chatham Area participated as members on TPIT in crafting the document.

We do not understand why the Chatham Area has repeatedly failed to include ADF&G in these reviews as required by Forest Service policy. State planners in other areas and Ranger Districts of the Tongass have willingly and promptly included ADF&G throughout their reviews and beginning early in the planning process. We note that this requirement is not limited to small old-growth habitat LUDs that do not meet the minimum criteria for such reserves. The review applies to all small reserves associated with new project planning.

Maps:

The DEIS maps were of generally poor quality due to missing elements needed for analysis. The chief element missing from the alternative maps is depiction of productive old growth as well as harvest units. Mapping old growth on a separate "Existing Condition" maps as this DEIS does is not adequate. This practice is a throwback to EISs of several years ago, which showed only harvest units on an otherwise blank map. Failure to include existing old growth on alternative maps makes it impossible to determine the effect of the alternatives on the forested landscape. The existing condition map does not distinguish between types of old growth, lumping all productive old growth together. This ignores years of interagency wildlife research that has shown that because of different elevation, aspect, volume class, vegetation type, etc. all old growth is not the same with respect to wildlife. Maps of existing condition and alternatives without contour lines, proposed harvest units, old growth delineated by strata or some other distinguishing characteristic are useless in evaluating a project's effects on the forest type mosaic, wildlife habitat, corridors, and other resource concerns. Recent Chatham Area project teams have apparently decided not to include high-quality maps for projects that are the normal review materials in all other areas and districts in the Tongass National Forest.

Alternatives to Clearcutting:

1-5
Revised Scoping comment: "We recommend that alternatives to clearcutting be used on this project as much as possible. Recent ADF&G research has found that selection logging that removes small numbers of trees (<30 per ha) distributed evenly throughout the unit (1-6 trees per 0.2 ha) can be quite effective in maintaining high quality winter habitat for deer while improving stand growth and yield. (See "Effects of selection logging on deer habitat in Southeast Alaska: a retrospective study" by M.D. Kirchhoff and R.G. Thomson, Federal Aid in Wildlife Restoration, Research Final Report, June 1998. ADF&G, Juneau. 37 pp.)"

For all the attention given in the narrative to alternative silviculture there seems to be very little significant alternative silviculture actually proposed for this sale. We note that the preferred alternative (B) uses clearcutting for all harvest units except for portions of a few units where marten standards and guidelines are prescribed. Even-aged management (clearcutting and clearcutting with reserves) is prescribed for 99 percent of the acres to be harvested under Alternative B, and 84 percent of the acres to be harvested under Alternative D. Alternative F, which proposes even-aged management on 29 percent of the acres, is the only alternative that comes close to the harvest system percentages that the DEIS says are prescribed by the alternatives. If one looks at the percentage of sale volume in this project harvested by alternatives to clearcutting, the use of alternative silviculture is quite low overall, despite the high-profile given in it the DEIS.

The term "two-aged" management is unclear within this DEIS. On one hand p. 3-55 says two-aged management differs from even-aged management based on the distribution of the trees remaining in the harvest unit. Yet it also says that "clearcut with reserves" is the two-aged prescription proposed for this project. "Reserves" implies groups of trees not evenly distributed throughout a unit. "Clearcuts with reserves" is not an alternative to clearcutting unless the reserve trees are widely dispersed. Leaving an "island of trees" results in essentially, a patch of

9-1

old-growth surrounded by a clearcut. Moving these "reserves" to the backbone of the cutting unit (the most likely placement from an operations standpoint), would result in a clearcut that is just a little smaller than it might otherwise be. The Forest Service needs to specify how the clearcut with reserves treatment will actually be applied before it can be claimed to be two-aged management.

9-1

While the preferred alternative is only a recommendation, we would hope that a less invasive alternative would be selected for the Record of Decision (ROD). Of the three action alternatives presented in the DEIS, Alternative F clearly minimizes the potential negative effects to water quality, fish habitat, and high value deer and marten habitat. Some of the benefits of this alternative include: (1) it constructs no new specified road and only 4.3 miles of temporary road; (2) it minimizes the amount of clearcutting and emphasizes a variety of selection harvest prescriptions in units accessed from the existing road system; (3) it involves the least number of fish bearing, non-fish bearing, and sensitive stream crossings (see Table Water-6); (4) it proposes the fewest miles of road construction on high hazard soils (all of which are temporary roads that will be closed following harvest completion); (5) it avoids harvesting in the Inbetween Creek watershed and the need for constructing and using a new LTF there; and (6) it constructs the fewest miles of road on wetlands. In addition, Alternative F is also the most economically viable of the three action alternatives (DEIS, page 3-63 and Table Silv/Tim-8). Consequently, we highly recommend that it be selected as the final alternative for the ROD. If Alternative F is selected, and harvesting is deferred in the Inbetween Creek watershed, then the existing road system in this drainage should either be effectively closed or inventoried, as the DEIS (page 3-46) describes, with the "removal or repair of structures or road segments identified as resource concerns."

Brown bear buffers:

Revised Scoping comment: "Streams should be surveyed for important brown bear foraging sites. Where these are found, 500-foot buffers need to be established to protect them. ADF&G needs to be consulted in identifying and managing these sites as specified by TLMP Standards and Guidelines."

1-3

The DEIS gives no indication that this has been done. It refers to a brief meeting in February 1999 with ADF&G staff at which "no specific issues were identified with the placement of units in any alternative." (pg. 3-21). This was a very preliminary project meeting prior to revised scoping for the project. Our revised scoping comments were made after that meeting. We have had no other involvement with project planners on this issue. A memo from Forest Supervisor Brad Powell to Tongass Leadership on 7 August 1998 titled, "Tongass Forest Plan Implementation Clarification Papers", mandates a process for evaluating brown bear foraging sites as to their need for 500-foot buffers. ADF&G had considerable input in developing this protocol and we understood it would be implemented in all projects under TLMP. That process is provided here.

- 1) "Identify Class I streams supporting spawning salmon (salmon streams) within the analysis area."

- 1-3
- 2) Of these salmon streams, delineate those stream segments classified as Moderate
 - 3) Apply the TLMF Riparian Standards and Guidelines to the salmon streams and identify segments that are protected by a 500' wide or greater protective buffer on both sides of the salmon stream.
 - 4) Along segments of salmon streams not protected in 3 above, visit the area looking for evidence of brown bear use. If time, funding or other factors limit the time in the field, focus work on the Moderate Gradient/Mixed Control and Flood Plain process group reaches of the stream.
 - a. Fish or wildlife biologists with experience in brown bear habitat should visit and walk salmon spawning habitats along streams after the peak of salmon run.
 - b. Examine the number of brown bear trails and resting sites along a given length of stream. Areas that are important to brown bears will have extensive trail systems often connecting the stream to nearby hills and bluffs overlooking the lower elevation riparian zone. The understory vegetation in these areas will usually be trampled by extensive bear activity.
 - 5) Record field observations on aerial photos and maps. If ADF&G personnel did not take part in the fieldwork, consult with the local Habitat and/or Wildlife Conservation biologist to see if they can provide any additional information. Consultation with ADF&G and others will be especially important for project areas on the mainland.

This process needs to be implemented in the Finger Mountain project area and ADF&G needs to be informed of the results and consulted in evaluating the need for buffers. The results of the work also need to be included in summary narrative in the Final EIS.

Subsistence:

The VCU's within this timber sale are all rated in the highest sensitivity to disturbance of subsistence uses by the Tongass Fish and Wildlife Resource Assessment (ADF&G 1998). Subsistence should receive heavy weight in considering the effects of the sale on forest users.

2-1

ADF&G research:

ADF&G has conducted extensive research on marten and brown bears on Chichagof Island for many years. The department has spent approximately \$1,000,000 on research that has been focused on the habitat needs of these species and was conducted in part to assist Forest Service planners, managers, and decision-makers to better manage natural resources. Although the research did not occur in the immediate Finger Mountain project area, the findings and results are applicable to understanding the needs of wildlife in the project area. As in the recent Indian River EIS, the Finger Mountain DEIS makes no reference to those projects and does not cite any of the numerous progress reports published by the researchers. This leads us to believe the findings of those studies have been ignored in the preparation and planning of this project.

1-6

Brown Creeper:

After correctly stating that brown creepers require large trees and large volume forest, the DEIS narrative on brown creeper (pp.3-22, 23) states that after harvest "at least 31,885 acres of unharvested productive old-growth forest would remain in the project area" implying that any remaining forest would suffice as creeper habitat. To be relevant to the discussion of brown creepers the DEIS needs to reveal how many acres of forest greater than 30,000 board feet per acre will be remaining. As with the maps, the DEIS seems to be implying that all old growth is the same with respect to wildlife.

1-7

Harvesting on MMI4 (very high mass movement index) Soils:

According to the DEIS (page 2-2), "All action alternatives including the proposed action are consistent with the modified 1997 Forest Plan. All applicable forest-wide and land use designation standards and guidelines are incorporated." However, it appears that harvesting is proposed on areas of MMI4 (very high mass movement index) soils, which the Forest Plan has designated as unsuitable and not available for timber production (i.e., harvesting is not allowed).

6-2

Table Water-2 indicates that 362 to 372 acres of "high hazard" soils will be harvested, depending on alternative. It is unclear whether these acres include MMI4 soils as, according to the footnote in this table (and in Tables Water-1 and Water-3), "High hazard soils are those that are either MMHAZ 3 or MMHAZ 4 [MMI4] in the CLU cover in the GIS database." In addition, in discussing the Soil and Water BMPs and standards and guidelines, the DEIS appears to indicate that at least some areas of MMI4 soils are proposed for harvesting in this project. If this is the case, then to be consistent with the Forest Plan, all such areas must be deleted from harvest consideration, regardless of the silvicultural and yarding systems prescribed.

Log Transfer Facilities:

The discussion of proposed Log Transfer Facilities (LTFs) [pages 3-67 and 3-68] lacks substance and does not provide site-specific information regarding the bathymetry of the LTF sites, flushing capabilities, current biological productivity and species diversity at the sites, or the amount and extent of existing bark accumulations from previous log transfer activities. This information needs to be included in the FEIS for this project, along with a discussion of the anticipated effects of the proposed log transfer facilities on intertidal and subtidal habitats, and the mitigation measures that will be used to minimize the loss of bark and its accumulation on the benthic substrate.

4-2

In addition, it is unclear whether the existing Inbetween LTF site was previously used, and why a different site is proposed for the Finger Mountain project. For example, Page 2-3 indicates that the existing LTF was a "previously used facility;" however, page 3-67 states that "The temporary drive-down ramp at Inbetween, and the low angle slide at the mouth of Crab Bay were permitted in the spring of 1993 for the Southeast Chichagof timber sale(s).

4-3

Finger Mountain Timber Sale DEIS	14	March 2, 2000	
<i>They were not built because the timber sales were not harvested</i> " (emphasis added). The map for Alternative A shows an existing road that terminates at salt water on Tenakee Inlet. Therefore, we assume that this site was, in fact, previously used as an LTF. However, the DEIS provides no indication of existing bark accumulations from this prior use, nor does it explain why a new, unimpacted site is proposed for this project. Impacts from bark deposition should be localized and limited to existing sites where log transfer has previously occurred. Before impacting a new site, the Forest Service needs to justify why the existing site cannot be used.			
The DEIS proposes a barge facility at the Crab Bay LTF site under Alternative B, but that a low-angle slide is proposed for this site under Alternatives D and F. We strongly advocate the barging of logs in lieu of conventional inwater log transfer, and recommend that a barge facility be used at this site for all three alternatives. It would seem reasonable to assume that if barging is considered for Alternative B, it should also be applied in Alternatives D and F.			
DFG has requested that the following project report (Marten Leave Tree Monitoring Project, see next page), dealing with the issue of marten monitoring, be attached as an addendum to their NEPA comments. As such, Peg Robertson's (USFS Wrangell Biologist) review of a portion of a timber sale where the latest marten standards and guidelines were employed is attached. The FS should improve implementation and monitoring of the marten standards and guidelines in light of the problems encountered in the Wrangell Ranger District. DFG requests that the USFS document the TLMIP implementation and implementation monitoring in the Finger Mountain sale.			
	4-2	4-3	4-1
			11-5
Finger Mountain Timber Sale DEIS	15	March 2, 2000	
<p>MARTEN LEAVE-TREE MONITORING PROJECT Nemo Loop Timber Sale Unit 3</p> <p>Review The Nemo Loop Timber Sale Environmental Assessment was prepared by the Wrangell Ranger District in 1998 and implemented the new Forest Plan standards for designating marten leave trees (see pg. 4-118 of the 1997 Forest Plan or TLRMP 1998 Implementation Policy For Marten pp.11-113 for description). To meet these standards we attempted to leave seven standing trees/acre within high value marten habitat. High value marten habitat is defined as high volume strata below 1500 feet in elevation. Due to the difficulty in leaving trees within cable units, most leave trees were "clumped" rather than "dispersed". We chose to mark individual trees for most units rather than attempt to achieve the objective through an upper diameter limit.</p> <p>In the Fall of 1999 the interdisciplinary team conducted an on-site monitoring review field trip of the Nemo project area. On this trip we could not determine whether or not the marten standards had been achieved. To assist in this determination, a wildlife technician followed up with a visit to Unit 3 to tally standing trees of 20" dbh (diameter-breast-height). No attempt was made to tally the number of large downed trees since this was assumed to meet the standards. This report is to summarize these findings (see attached write-up and spreadsheet) and our subsequent discussions with a timber layout representative and sale administrators.</p> <p>We did not meet the marten standard for Unit 3 but retained 82-95% of the standing trees required (33 acres of this 37 acre unit qualify as "high value habitat"). Our greatest discrepancy was between the number of standing decadent required and the number of standing decadent trees tallied as remaining in the unit (99 vs. 58). At least 10 leave trees were removed during harvesting but all (except for one) were replaced by a similar size/species of tree within the unit according to the sale administrators. At least nine leave trees blew down either during or after harvesting. The operator chose to helicopter this unit even though it was designed for cable logging.</p> <p>Issues with marking leave trees There is some confusion in interpreting the marten standards. One question is whether we are required to meet seven standing trees per acre and 10-20% of existing stand structure. During marking it is difficult to determine if the 10-20% standard has been met and answering this question may depend on the number of stand plots.</p> <p>We intentionally marked trees that were adjacent to the unit boundary and marked trees in clumps for operational reasons. Implementation policy states that when clumping... "retain 10% or more of the original stand structure in the openings between clumps". This does not appear to be met in Unit 3. We do not know how it is possible to meet this standard/guideline for a conventional cable unit. In addition, individual trees would be highly susceptible to windthrow in this unit. Individual trees large enough to withstand wind forces become a safety concern to the operator.</p>			
			11-5

STATE OF ALASKA

OFFICE OF THE GOVERNOR

TONY KNOWLES, GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

☐ SOUTHERN REGIONAL OFFICE
 500 W. 7TH AVENUE, SUITE 1000
 ANCHORAGE, ALASKA 99501
 PH: (907) 269-3980 FAX: (907) 269-3981

☐ PIPELINE COORDINATOR'S OFFICE
 1000 W. 10TH AVENUE, SUITE 1000
 ANCHORAGE, ALASKA 99512-2493
 PH: (907) 271-4317 FAX: (907) 272-0690

☐ CENTRAL OFFICE
 500 W. 10TH AVENUE, SUITE 1000
 JUNEAU, ALASKA 99801-0030
 PH: (907) 465-3602 FAX: (907) 465-3075

January 7, 2000

Lisa Winn, Team Leader
 Attn: Finger Mountain EIS
 USDA Forest Service
 204 Signaka Way
 Sitka, AK 99835

Dear Ms. Winn:

SUBJECT: FINGER MOUNTAIN TIMBER SALE DEIS
 STATE I.D. NO. AK 0001-051J
 START OF ACMP REVIEW

On January 3, 1999 the Division of Governmental Coordination (DGC) received the complete federal consistency determination and supporting information you submitted for State of Alaska review and agreement under Section 307(c)(1) of the Federal Coastal Zone Management Act as per 15 CFR 30, Subpart C. The proposed activity affects the coastal zone of Alaska, and therefore requires review for consistency with the Alaska Coastal Management Program (ACMP). This letter initiates the State review of the proposed activity under the process described in State and federal regulations as outlined below.

Scope of Project to be Reviewed

The activity subject to this review is the USDA Forest Service proposal to harvest approximately 21.4 million board feet of timber in the Finger Mountain project area, Sitka Ranger District, Tongass National Forest. Timber volume would be sold from the project in multiple sales of varying sizes. The DEIS describes four alternatives which provide different combinations of resource outputs and spatial locations of harvest units. The alternatives include: A) proposing no new harvest from the project area at this time; B) emphasizing harvest away from salt water to reduce scenic and substance impacts (proposed action); D) reducing harvest in high-value deer winter range and key wildlife habitat connections; and F) minimizing the potential scenic effects by reducing the amount of harvest and using selection harvest prescriptions on units accessed from the existing road system.

Finger Mountain Timber Sale DEIS 16 March 2, 2000

The timber crew marked 270 trees during their cruise but we were only able to find 190 trees (post-harvest) that met the standard. One reason for this may be the use of visual estimates of dbh during the marking process. There may be a number of trees slightly below the 20" dbh cutoff point that were marked as leave trees. If this is the technique employed in the future we may need to mark more (>20%) of the trees required to account for observer error, blowdown, etc. It would also be beneficial to record the dbh of all leave trees during the marking process for later comparisons.

We have heard different opinions on the level of biologist input that is necessary to mark trees. For some sales we are considering asking the purchaser to designate leave trees. Based on these results and the recommendation of those involved with layout for Nemo we recommend a high level of biologist input during the marking process. Likewise, it would be appropriate for the sale administrators to consult with a biologist in situations where the operator decides that a leave tree needs to be removed.

11-5

Issues with monitoring

We know of no existing protocol for monitoring whether or not the marten standard and guideline is being implemented correctly. Finding marked trees in a harvested unit is difficult due to the amount of debris and we assume there is error in the numbers provided for this report. Based on this small effort we give the following recommendations:

- Assign different individuals or teams to collect data for the same unit and compare the results for consistency.
- Use more people. One suggestion was to send a team of four people with paint to tally trees (for a unit of approximately the same size).
- Monitor more units. This will take a fair amount of time and effort. Field work for this project involved three days of work for one technician on a 33 acre unit.
- Ask a layout person to participate with monitoring. Use pre-harvest maps and numbers.
- Tally the leave trees less than 20" dbh and the number of downed logs > 20" dbh to address more monitoring questions.

Prepared by: Peg Robertsen
 Date: November 12th, 1999

Thanks to Doug Clark for his assistance in collecting and summarizing this information. Thanks to Rich Mendoza, Tyler Gumm, Mark Pompek, Ben Case, Steve Brady and Julianne Thompson for their suggestions and edits.

Review Process

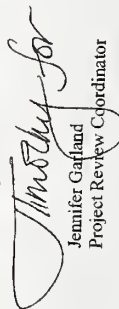
I distributed the packet of information to the following review participants: Alaska Departments of Environmental Conservation, Fish and Game, and Natural Resources, the Sitka Coastal District, and other interested parties (see distribution list). A public notice published in the Sitka Sentinel on January 10, 2000 informed the public of the proposed activity. No federal agency may issue its authorization before DGC issues the final consistency finding.

The review schedule is identified on the attached Project Information Sheet. Inherent in this schedule is the need for a 15-day extension to the 45-day review period as provided under 15 CFR 930.41(b), which the State hereby requests. The State may request additional extension(s) if necessary.

State review participants will evaluate the proposed activity for consistency with the statewide standards of the ACMP (6 AAC 80) and the enforceable policies of the Sitka Coastal District Program. The public also may submit comments. DGC must receive reviewer and public comments **before 5:00 p.m. on 02/09/2000**. Commentors may recommend alternative measures necessary for the activity to be consistent with the ACMP. DGC will review and integrate the comments as appropriate and issue a proposed consistency finding with alternative measures, if necessary, to make the activity consistent to the maximum extent practicable with the applicable standards and district policies of the ACMP. The USFS, State resource agencies, and any affected coastal resource district have five days from receipt of the proposed consistency finding to request elevation of the proposed finding. DGC will issue a final consistency finding by the end of the review period, unless USFS and DGC agree to additional time. The USFS may not take final action on the proposed activity sooner than 90 days from the date the State received the consistency determination unless USFS and DGC agree to an alternative period (15 CFR 930.41(c)).

Please contact me at 465-3177, or email Jennifer_Garland@gov.state.ak.us if you have any questions.

Sincerely,


Jennifer Garland
Project Review Coordinator

Enclosure

cc: Packet Distribution List
Duane Petersen, FWS, Juneau
Mark Jen. EPA, Juneau

12/28/2000 15:50 5077562287

TENAKEE SPRINGS AK

PAGE 8

VSF

February 28, 2000

Lisa Wilson

Jim Franzel, District Ranger
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Re: Finger Mountain EIS

Of the alternatives that were presented in the Draft EIS, alternative "A" is the one I support. During public meetings held in Tenakee Springs, the citizens have expressed their concerns about continued clear-cutting of old growth forest in the Inlet. The proposed areas in the Finger Mountain Timber Sale(s) have a variety of uses for residents, including tourism, recreation, commercial and sport fishing, subsistence and sport hunting and berry gathering.

For the record I ask that the Forest Service:

- Not build roads and clear-cut old-growth in roadless areas, especially Little Seal Bay. 3-1, 11-4
- Fully protect important subsistence and sport use of deer in the area.
- Take a hard look at the long-term impacts from this sale, past sales, and other proposed timber sales planned in Tenakee Inlet, including the Indian River Sale. 11-1
- Design the timber sale to respond to the economic needs of Tenakee Springs by choosing the Chitbagof Conservation Council alternative. 5-1
- Prohibit the dumping of logs in the water. Instead, the Forest Service should require that all logs from the sale be placed on barges. 4-1

Sincerely,


Mary Almy
Bx 544

Tenakee Springs, AK 99841

February 27, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginiuk Way
Sitka, AK 99835
Fax # 907 747-4331

Mr. Franzel,

I would like to make some comments concerning the Finger Mountain timber sale -

The Forest Service's preferred alternative ("B") proposal includes log transfer facilities (LTF's) at Crab Bay and in-between Creek, a logging camp at Crab Bay and a floating camp at Seal Bay. It includes huge clear cuts on the face of the mountain directly across from Tenakee.

I am against any log transfer facilities at Crab Bay because of the impact that it would have on the use of individuals fishing and crabbing there and also the impact on the commercial crab fishing that takes place. The south side of the inlet is where all the commercial crab fishing takes place for Dungeness, Tanner and King crab. I feel that the most impact would be on the Dungeness crab fishery that takes place in the early summer and continues into late fall. This is the same time of year that the logging activities would be taking place. The waters where the Dungeness crab are fished is shallow and I am afraid of the effects of debris from floating logs. I am also concerned about industrial run-off from the logging operations. If there were a camp located in Crab Bay, this would only compound the effects of run-off. The same holds true if there is a floating camp located in Seal Bay. Seal Bay is not that big and is also fished commercially for Dungeness crab. Run-off of any kind would have an adverse effect on the marine life. The increased marine vessel traffic associated with the logging activities would also add to the problem.

Over the years the inlet and surrounding areas have been used for increasing tourism activities. With the Finger Mountain timber sale and four other timber sales (Indian River, Eight Fathom Bight, False Island and Saook Bay) all within 20 miles of Tenakee Inlet any logging would have a negative effect on the area. Local individuals and businesses that depend on it for their livelihood would feel the devastating effects. The visual and noise impacts would be enough to drive business away and somewhere else.

Over the years, Tenakee Inlet has been heavily impacted by timber sales and logging operations over its entire length. Because of this and the direct effects of this sale, including the noise, visual impacts and habitat destruction, most of the residents of Tenakee are in favor of alternative "A", NO ACTION in the Forest Service plan.

Every time I ride the ferry and we stop in Hoonah during the daylight, it makes my heart sink. I do not want Tenakee Inlet to look like that. I do not want to look out my window to see nothing but clear cuts. Tenakee Inlet is a beautiful area. If a certain Alaskan Senator doesn't want clear cuts in his front yard, neither do I.

It is my opinion that the Forest Service should chose alternative "A", NO ACTION, concerning the Finger Mountain timber sale.

Sincerely,



Beret Barnes
PO Box 502
Tenakee Springs, Alaska 99841
(907) 736-2226

February 27, 2000

James Franzel, District Ranger
204 Siginiuk Way
Sitka, AK 99835
RE: FINGER MOUNTAIN EIS

I would like to comment on the proposed "Finger Mountain" DEIS. I am very familiar with the area and have, since 1972, spent a great deal of time in Tenakee Inlet. I have owned property in Tenakee Springs since 1980 and most of my recreational activities are pursued in the numerous bays and forests of the inlet.

I am opposed to this timber sale for many reasons. There is no benefit to the local community of Tenakee Springs from the proposal, essentially no benefit to the State of Alaska or to the public in general. Economically, timber sales on the Tongass have not been profitable to the US Treasury and it therefore makes no sense to take a public resource and subsidize its short term utilization. Ecologically, there is no benefit to the environment or the deer, bears, salmon, and other creatures that depend on the forest for their survival. Nor are we humans benefited by the reduction in animal populations that result from clear cut harvesting in old growth stands. Tenakee Inlet, which has been impacted from past logging activities, still remains a relatively undisturbed area where people who live nearby can pursue a lifestyle that would be threatened by increased industrial logging, and also an area attractive to visitors from other parts of our country for various reasons including fishing, hunting and wildlife viewing. There is no clearly demonstrable purpose or need for the proposed timber sale. No benefit. We do not need more undisturbed forest, the wilderness that benefits the human spirit in different ways difficult to express in words, turned into clearcuts, or more bays with log dumps and more noise. It should be clear that the public's distaste for the long term timber sales and pulp mills resulted from a desire to have the forest used in a different way; not dissolved into pulp to be sent to a foreign country and then sent back to the United States as finished products. That public distaste also was a result of the recognition of the values to society of undisturbed natural ecosystems, and it said "leave some of these areas in their natural state". Are Seal and Little Seal Bays special places? Well, yes they are, because they haven't been impacted by large scale timber harvesting. And they will be changed forever, *forever*, if they are logged. Even if there was some short term economic gain to logging the area, which I am unconvinced is the case, this would need to be balanced against the fact that the other values would be impacted virtually forever (at least for my and my children's children's lifetimes). Take a walk into the tidal meadows of Little Seal Bay. That would be the best argument against destroying the tranquility that exists there. The Tongass is not just a tree farm for the timber industry. The Forest Service should concentrate any timber sales in areas that have already been severely impacted from timber harvest. Tenakee Inlet should be left to be enjoyed as a public resource for its values other than the timber.

Thank you for consideration of my comments,

Arthur Bloom
4506 Prospect Way
Juneau, AK 99801
PO Box 42
Tenakee Springs, AK 99841

Subject: Finger Mountain EIS
 Sender: sealives /INTERNET (sealives@seaknet.alaska.edu)

Attached Date: 02/16/00 18:02

Priority: normal

Sensitivity: normal

Importance: normal

Part 1

FROM: sealives / INTERNET

DDT1=RFC-822; DDV1=sealives@seaknet.alaska.edu;

TO: fingermt / r10, chatham

CC: sealives / INTERNET

DDT1=RFC-822; DDV1=sealives@seaknet.alaska.edu;

Part 2

ARPA MESSAGE HEADER

Part 3

Mr. Jim Franzel, District Ranger
 USFS

Dear Mr. Franzel,

I am writing about the Tenakee Springs--Finger Mountain timber sales issues as a SE resident, and from the perspective of a professional ecologist and marine scientist.

It concerns me that USFS has not included the CCC alternative in the Draft EIS. As you know this alternative came from the community most affected by proposed actions; CCC emphasizes selective logging, avoids roadless areas, and allows local small scale opportunities for high-value added processors. 5-1

There should be no clear cutting or road building in roadless areas, in particular Little Seal Bay. Resulting impacts from erosion and sedimentation to the watershed and coastal zone are not acceptable. 11-4

There are important subsistence, sport and tourism resources, terrestrial and marine, that the proposed action would affect irreversibly and negatively.

Long-term impacts -- ecological, economic, and social -- of this proposed sale, including the Indian River sale, have not been adequately assessed. 11-1

The timber sale does not do anything positive for the economy of Tenakee Springs; USFS should face today's realities -- social, political, economic, and

environmental -- and choose the CCC alternative.

Lastly, the negative ecological impacts of log dumping are well known from work in SE by UA Oceans and Fisheries Faculty in Juneau, and work of others in the Pacific NW. USFS should require all logs be placed and transported by barge. 4-1

I'd be happy to discuss these issues with you further.

Sincerely,

Larry Basch, Ph.D.

P.O. Box 348

Gustavus, AK, 99826

sealives@seaknet.alaska.edu

(907) 697-2114 (eve)

2/26
JIM FRANKEL

For 17 years I have worked in the areas of Icy, Chatham and Perils Straits. I am witness to the huge clear cuts. The scar on the land. The resource devastated. A flight around Chichagof and Togi Strait sadly shows the over harvest.

I urge you to favor Alternative H (No Action) at this time until a more appropriate harvest is planned.

Planning a major clear cut in Tanana will be a travesty to our forest streams, wildlife and the residence of this area. Please actively support Alternative A

Thank you

Sincerely

Michael Broad
(Box 81)

Justus Alaska

>From: "Patricia and Norman Blank" <blanks@wytbear.com>
 >To: fingermt/r10-chatham@fs.fed.us
 >Subject: Finger Mountain Timber Sale
 >Date: Wed, Feb 16, 2000, 5:13 PM
 >

> Please take into consideration the alternative (CCC) logging plan developed
 > by the residents of Tenakee Springs for their area. The Little Seal Bay 11-4
 > watershed is of particular need of protection for the pristine old growth
 > that provides for subsistence, commercial and sport hunting and fishing.
 > Please do not allow logs from cutting in any area of this sale to be dumped
 > directly into the water. 4-1
 > Please do not build roads into any roadless old-growth areas. 3-1
 > Please fully protect subsistence use of this area. 2-1
 > Please respond to the needs of Tenakee Springs by adopting the CCC
 > alternative. 5-1
 >
 > Sincerely, Patricia and Norman Blank

Feb 7, 00

To: James Friesel
 District Ranger
 Attn: Finger Mountain EIS

Sir

Here's another voice from Tenakee opposed to
 logging Tenakee inlet. we've been supplying timber off
 Chienyoff Island to the detriment of the forest here
 beyond the forest's capacity to replace itself. Flyover the
 island and tell me how the forest has been
 "managed properly." I know not all the damage
 was under your jurisdiction yet ecologists don't know
 about human boundaries. The total effect is one
 of shameful destruction. We have some left. Enough
 is enough. Leave the rest alone.

Pete Bryant.

Dear Mr. Franzel,

I would like to express my objection to the Finger Mountain timber sale and also to any additional roadbuilding for logging in other than second growth timber.

I am not categorically opposed to logging, but all the science I have read, and my own observations as a naturalist, strongly support the thesis that the high volume/high wildlife value/high logging value forest is very reduced from its pre-"50 year contract" days. Further large-scale logging of these high volume stands is done at the biological peril of the forest.

I would passionately support any logging plans that focused on harvest of previously logged areas. I recognize that the infrastructure is not yet in place to economically log these second growth areas. But that is the direction our logging management needs to be going on the Tongass.

Thank you,
Scott Brylinsky

22 FEB 00

To: Jim Franzel, District Ranger
USFS

Dear Jim -

I'm writing in strong opposition to the USFS's proposed Finger Mtn Timber Sale. This sale, along w/ the Indian River Sale, and all the other clear cuts that already exist in Tenakee Inlet, will have a devastating effect on the wildlife in these areas, & the people who depend on this wildlife. The USFS needs to wake up to the fact that large clear-cuts & logging roads/areas is NOT in the best interests of the owners of these forests, the American taxpayer. I wish to ask that the USFS consider the following requests:

- 1) NO LOGGING, OR ROADS, INTO ROADLESS AREAS.
- 2) LOOK AT THE CUMULATIVE EFFECTS OF ALL THE PAST, & PLANNED, LOGGING IN TENAKEE INLET.
- 3) TAKE INTO CONSIDERATION THE LOGS WHO USE THIS AREA & SHOW SOME COMPASSION TO THEIR WISHES. YOU SHOULD AT LEAST GIVE HUMAN CONSIDERATION TO THEIR CCC ALTERNATIVE.
- 4) IF LOGGING IS TO EXIST ANYWHERE IN SE AK & WATER TRANSPORTATION IS USED, ~~LOG~~ BARGES MUST BE USED. NO MORE LOG DUMPS IN THE WATER!!

I've been visiting Tenakee Inlet over the last 25 yrs, & the area is important to me. It's time for the USFS to listen the requests of Tenakee & stop cutting away at their future. The times have changed, please take another look.

Paul Barnes
Box 155
Gustavus, AK 99846

Thomas J. Bauer
P.O. Box 2
Pelican Alaska 99832
23 February 2000

To:

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signakka Way
Sitka, Alaska 99835

Subject: Finger Mountain Timber Sale

Reference: Finger Mountain Draft Environmental Impact Statement

Sir;

As a boater, sport fisherman and hunter that uses the Tenakee Inlet area, I wish to express my very strong disapproval of your proposed logging plan for the forests bordering this area. Additionally, even though it is not within the specific subject area of this letter, I also wish to express my objection to the Indian River Timber sale.

The overwhelming negative aspect of this proposed logging is that it will not benefit anyone in the user area (Tenakee residence, boaters, tourists, fishermen, crabbers or local high-value added timber processors.), only very limited regional inhabitants (loggers), and virtually none of the American taxpayers. The cost of preparing these parcels will most likely greatly exceed the revenue from the timber sale, with the local user groups left with hideous "new growth" areas, and Japan stockpiling virgin growth yellow cedar rounds.

More specifically, the introduction of logging roads and their gravel pits into roadless, pristine, old-growth watersheds will dramatically alter the user profile, hunter pressure, esthetics and overall ambience. Again, we must subtract the costs of these roads from the revenue of the timber sale to truly assess just what the taxpayers are paying to turn pristine old-growth watersheds into clear-cut scars.

An additional concern is the proposed use of log dumps that will deposit logs directly into the water. Log dumps by themselves are an eyesore to the boater, local inhabitant and tourists. The subsequent alder thickets that develop seem to highlight the area for all to see. The real malady of log dumps is that they allow log bark to reach the HHWL which deposits loose bark on the sea floor. This bark blankets the sea floor and has a smothering effect on plant life and bottom dwellers such as crab and starfish.

4-1

The era of wholesale clear-cut logging without regard to local residents and recreational user groups must come to an end. Every time I transit the area of Icy Strait/Cross Sound and see the results of unmanaged, private, clear-cut logging it makes me hope that clearer heads will prevail someday and that the same destiny will not befall all of Southeast Alaska.

Logging has its place in National Forests. The trend in Alaska has been almost exclusively clear-cut logging. The terms logging and clear-cut logging have become synonymous to most Alaskans due to U.S. Forest Service practices. Placating the foreign-national logging company to greatly reduce costs and increase profits has stripped the term selective logging from Department vocabulary.

It is time that the Forest Service paid heed to locally developed timber sale proposals that emphasize selective logging methods, stay out of roadless areas, and provide small scale operators the opportunity for local, high-value added operations. Local residents of Tenakee put forth the CCC Alternative during the Indian River DEIS, but to my knowledge, the Forest Service completely ignored this local residents input during the DEIS process.

5-1

I can think of no redeeming attributes of this proposed timber sale to any U.S. resident outside of the logger from Oregon that will come up here to cut the trees before they are sent to Japan.


Thomas J. Bauer
M/V Semper Fidelis

James Franger, District Ranger
204 Siginaka Way
Sitka, A.K. 99835

Feb 14, 00
904 Freeman La.
Grass Valley, Ca.
95949

Attn: Finger Mountain EIS

Dear Ranger Franzel,

I am writing to you as a concerned individual regarding the clear-cutting operation in the Tongass National Forest. You ask why should an individual from California be interested in what happens in Alaska. I have made many trips to Alaska, and have flown over many areas that have been clear-cut. What a sorry sight. Alaska is one of the few places where the dance of life continues in all its wild, splendid glory. The area in question provides habitat critical for wildlife. The continued clear-cutting as I have seen from the plane not only fragments wildlife habitat, but could also cause soil erosion.

I am not an environmentalist, but a concerned citizen who hates to see the last frontier violated. How did I hear about this issue, you ask. The sportmans in Sacramento, held in Jan. 00 alerted me to this situation. Please rethink your plan of attack relative to the benefit of all of us that enjoy Alaska, the last great frontier. I would appreciate your comments on this program, and what your thoughts are relative to your future actions.

Sincerely,
Walter Bailey
Walter Bailey

Feb. 17, 2000

USFS Dist. Ranger Jim Franzel
Sitka, AK

Re: Finger Mtn. EIS

Dear Jim:

I am opposed to the old-style timber sale that USFS has proposed in Tenakee Inlet.

The Forest Service has called for public participation, got it — in a balanced, alternative proposal, & then disregarded the local effort.

When do responsive actions begin?

Sincerely,
William F. Gustaves

William F. Gustaves
Gustaves, AK 99826-0128

PH/PAK 927/697-2444

Chichagof Conservation Council
Box 621 Tenakee Springs Alaska
99841

February 27, 2000

Forest Supervisor
 Tongass National Forest Chatham Area
 Ath. Finger Mountain EIS
 204 Siginaka Way
 Sitka, AK 99835

Dear Forest Supervisor,

The Chichagof Conservation Council is a non-profit organization dedicated to providing information and education regarding conservation of natural resources. Our members are a diverse group of commercial fishermen, tourism operators, business owners, small timber operators, sport and subsistence hunters, recreationists, residents and visitors who are concerned about the future of Tenakee Inlet, Chichagof Island, and the Tongass National Forest.

On behalf of our members, the Chichagof Conservation Council endorses the comments on the Draft Environmental Impact Statement for the proposed Finger Mountain Timber Sales that were submitted by the City of Tenakee Springs in the form of Resolution 2000-22. We agree that the only acceptable alternative listed is the No Action, Alternative A.

We would like the final EIS to address the following points:

1. **Purpose and Need.** The purpose and need fails to adequately consider the values of recreation, subsistence and tourism. Approximately one half of the project area is a Timber Production LUD for which the goal is to provide a continuous supply of wood to meet society's needs, seek to reduce clear cutting and improve growth and productivity. A significant portion of all alternatives target Alaska yellow cedar. They harvest, in fact, the prime cedar stands in the project area. The Forest Service has been unable to demonstrate an ability to regenerate new growth of Alaska cedar. To target old growth yellow cedar for round log export does not meet the sustained yield mandate of the timber production LUD. The proposed action takes too large a quantity of old growth to insure in any way a long term supply of old growth characteristic wood. The DEIS fails to show that market demand exists.
2. **Proposed Action Most Damaging.** We are particularly dismayed that the proposed action, Alternative B is the most onerous of all considered alternatives in terms of road building and clear cut harvesting. The proposed action would build 20.6 miles of new road, including 9.5 miles in the previously unroaded Little Seal Bay watershed. The proposed harvest along that new road would take a significant portion of timber from extremely steep ground

from the headwaters of the major drainage associated with Little Seal Bay. The adjacent old growth habitat reserve is mostly muskeg meadow and poorly drained low lands. The proposed action plans to harvest a significant portion of the adjacent high volume old growth critical for winter deer habitat. For some reason, or perhaps no reason, this area was excluded from the old growth habitat reserve. The proposed new road would be adjacent to, or part of, a large unroaded area and as such would be part of a National Forest roadless policy now being considered by the Department of Agriculture. New road construction in unroaded areas should be held in abeyance until the decision on roadless policy has been made.

3. **Alternative to Clearcuts.** One of the chief concerns of local residents is the degradation of scenic resources caused by visible logging activity. Most visible would be the clearcut and clearcut with reserve, and yet these prescriptions are used exclusively throughout the proposed action. Proposed harvest in the Fog Creek drainage in particular would be visible from Tenakee Springs, adding to the degradation of the view shed from previous harvest. If timber is to be harvested from Crab Bay we recommend 25-40% patch or group selection and other lower impact prescriptions.
4. **Inadequate Range of Alternatives.** The range of alternatives considered are from 11 to over 21 mmf. The Chichagof Conservation Council submitted, we believe in a timely manner, a suggested alternative which would harvest approximately 3.7 mmf over several years. The proposal was summarily dismissed with a statement that the issues addressed were in fact covered in the proposed alternatives considered in the DEIS. However, no single considered alternative contained all the characteristics included in the CCC Alternative. Most particularly, the others far exceeded the harvest volume proposed in the CCC Alternative. Of utmost importance in the CCC alternative was the proposal for small operators to do primary processing on site and produce a higher value added product than round logs. It was hoped this activity would provide an economic benefit to the community of Tenakee Springs to help balance any detrimental effects of timber harvest.
5. **Proposed LTFs.** We believe that any LTF constructed or reconstructed in the project area should be barge facilities and that no logs should be placed in the water. This is especially important at the Crab Bay LTF to minimize effect on spawning herring and the migration of Dungeness crab.
6. **Cultural Resource Protection.** An extensive group of petroglyphs is located in VCU 233. Tenakee Historical Collection has asked to be part of the recommended "specific monitoring" of this site throughout duration of use of the LTF at Crab Bay. Inclusion of this local organization in the monitoring process is appropriate.
7. **Wildlife and Subsistence.** At the January 2000 meeting in Tenakee Springs to discuss the draft EIS and a proposed action, a Forest Service representative stated that the proposed activity in Inbetween and the new road proposed in the Little Seal drainage resulted because during scoping most

February 16, 2000
17105 Glacier Hwy.
Juneau, AK 99801

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginak Way
Sitka, AK 99835

comments focused on Crab Bay. In fact, the area above Inbetween Creek and around Little Seal Bay is of extreme importance for subsistence deer hunting by Tenakee residents. There are excellent small boat anchorages which provide access to considerable deer habitat. We are dismayed that such extensive timber harvest would be proposed merely because the area did not receive the same level of comments during scoping. 2-1

We believe all of these points were inadequately addressed and should be better addressed in the Final EIS. We particularly request that an alternative containing all the desired points of the CCC Alternative be designed and seriously considered.

Thank you for considering this request and addressing these issues.

Sincerely,

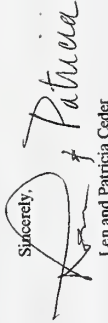
John Wisenbaugh,
President

Dear Mr. Franzel, We encourage you to cancel or limit as much as possible the proposed Finger Mountain timber sale. Over the last eighteen years, we have spent a great deal of time in Tenakee Inlet. Recently, we have purchased land in the town of Tenakee Springs. The whole inlet is special, especially the areas not yet invaded by roads nor logged. The previous areas of clear-cut logging, however, remain disfigured and still unproductive for at least one type of use: subsistence deer hunting. Damage to marine fauna and flora and its lifestyle would also suffer (witness the adverse responses from year-round Tenakee residents to both the Finger Mountain proposition and the completed Indian River sale.) 2-1

Financially, any benefit would be limited and certainly would not remain in the local area. In fact, it is likely, a good portion of the revenues would accrue to foreign interests. 5-1

Once again, we encourage you to limit in any way possible the negative impact of logging in this beautiful area. Thank you for your consideration of these thoughts.

Sincerely,



Len and Patricia Cedar

February 26, 2000

Jim Franzel, District Ranger
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Re: Finger Mtn Draft EIS

Dear Mr. Franzel:

I favor the No Action Alternative, i.e. Alternative A. I oppose the building of any more roads in the Tongass. 3-1

There are important subsistence values to be protected in the Tenakee area, as well as fisheries and other wild life. Roads and logging would impact those unacceptably. It would also be deleterious to the economy of the community of Tenakee Inlet. 7-4

When I was NMFS Biologist diver, I dived in the Tenakee Inlet Bays and was struck by the unique ecology of the area, which should be protected from destruction by activities such as logging, log storage, and log transfer into water.

I draw your attention to an excellent economic study of the Tenakee area done by the State of Alaska Division of Community Planning in 1975. The study concluded that the highest value to be gained in the area was to leave it be. The case for this would be even stronger now that there is so much opportunity for chartering for tourists who wish a wilderness experience.

Further, I oppose the use of log transfer facilities which place logs in water. Any log transfer should be onto barges. I make this statement after ten years of diving on log dumps in SE Alaska. 4-1

Thank you for the opportunity to comment.

Sincerely,

Natasha I. Calvin

Natasha I. Calvin
PO Box 2966
Sitka, Alaska 99835

Ref: The Socio-Economic Implications of Logging Operations on Tenakee Springs, and Tenakee Inlet, Alaska, by: Division of Community Planning, Dept of Community and Regional Affairs, State of Alaska December 1975

Telephone (606) 474-9322
Fax (606) 474-4422

Robert L. Caummisar
Attorney at Law

301 West Main Street
Grayson, Kentucky 41143 • 1299

February 11, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

Dear Ranger Franzel:

I am informed Draft Environmental Impact Statement public comment period is open through end of February as to the proposed "Finger Mountain" timber sale.

Permit me to join those who endorse Alternative A which would prevent logging operations on the Tenakee Inlet at Crab Bay.

The denuding of 936 acres by clear cutting would interfere with hunting and fishing and negatively impact on tourism in the area.

Please Mr. Woodsman, spare those trees.

Very truly yours,

Robert L. Caummisar

bjw

City of Tenakee Springs

RESOLUTION 2000-22

In the Council
February 24, 2000

Introduced by
Vicki Wisenbaugh

A RESOLUTION FOR THE CITY OF TENAKEE SPRINGS, ALASKA IN SUPPORT OF ALTERNATIVE "A" IN THE FINGER MOUNTAIN DEIS

WHEREAS, the Tongass Forest lands form an integral part of our lifestyle in Tenakee Springs and the forest lands and countless resources they produce affect not only how we live, but also where and why we live in this community; and

WHEREAS, continued clear-cutting of old growth forest in Tenakee Inlet is having a detrimental effect on the economy of Tenakee Springs, and

WHEREAS, the DEIS fails to adequately acknowledge and evaluate the long term cumulative impact of two contemporaneous timber sales in Tenakee Inlet; and 11-1

WHEREAS, the Forest Service is in violation of NEPA in failing to adequately assess the impacts of planned timber sales on the tourism industry and economy of Tenakee Springs; and 3-3

WHEREAS, the location of the existing Crab Bay log dump is known to be the most important herring spawning area in Tenakee Inlet, disturbance of this area will adversely affect the local marine eco-system; and

WHEREAS, the proposed clear-cuts at the mouth of Crab Bay would have severe negative effect on our ability to attract future visitors to our tourism industry; and 11-a

WHEREAS, the Forest Service failed to follow TLMF goal for collaborative stewardship by dismissing the Chichagof Conservation Council alternative; and

WHEREAS, the adoption of Alternative "A" would actually lead to a greater economic benefit to the region over the long term than would any short term gains from this timber sale; and

WHEREAS, the residents of Tenakee Springs have been unanimous in their support of the "no action alternative" at public meetings conducted by the Forest Service; and

WHEREAS, we believe it is of critical importance to preserve what is left of the fragile old growth forest we have left in order to maintain not only our lifestyle but also the qualities that are essential to our controlled but growing tourism industry;

City of Tenakee Springs
Resolution 2000-22

Page 2

5-1
THEREFORE BE IT RESOLVED by the Common Council of the City of Tenakee Springs to urge the Forest Service to fully consider and evaluate the CCC alternative in the range of alternatives. Given the range of alternatives presented in the DEIS, the City of Tenakee Springs can only support Alternative "A" for the Finger Mountain Project.

ADOPTED 5 AYES, 2 ABSENT. THIS 24th DAY OF February 2000



Louis S. Heins
Louis S. Heins
City Council President
ex officio MAYOR

ATTEST

Mary M. Gony
Mary M. Gony, City Clerk

Cascadia Wildlands Project

Gabriel Scott
Alaska Representative
389 Teresa Turnaround
Fairbanks AK. 99712
907-457-5555
2/29/00

Handwritten note:
No objection to this
resolution

James Erickson
City Clerk
Via E-mail
Sitka, AK. 99834
907-442-4444

RE: Finger Mtn. EIS

The following are the comments of the Cascadia Wildlands Project for the Finger Mountain Project:

- *The Forest Service should stop pursuing industrial logging altogether. There is no potential to continue destroying the public forests.
- *We have thoroughly examined the impacts of helicopter logging. The DEIS fails to include the other available information, and understates the potential impacts. The damage to the FEIS should include impacts related to wildlife (and resident plant/animal), damage to residual trees, risk of fuel spills, and exclusion of small game etc. The indirect effects of helicopters are significant, and information regarding those impacts must be included in the FEIS.
- *The recreation alternative should be taken seriously. The DEIS seems slanted towards a development of the area.
- *Alternative B is touted as best for wildlife habitat, but it would log the highest amount of high quality old growth habitat. The reasoning behind the alternatives is unclear. The alternative submitted by CCC should have been evaluated. The range of alternatives holds a important issues, and presents a biased interpretation of the possible range of action.
- *The timber sale is economically unjustified.
- *There would be unacceptable impacts to subsistence resources which are not properly

72
73

Feb 24 / 2000

To James Trangel, District Forester

Re: Finger Mountain EIS.

To begin, why call it the "Finger Mountain Sale"? Why not call it another Tenakee Anlet "Sale"?

Your proposed cuts in alternative "B" leaves us looking out our front window at yet another clear cut (s). You'll soon have us looking like Hoonalatchikon or even like the west side of Admiralty Island. Bare naked. Now perhaps the Politicians and Forest Service will leave this spot alone with the habitat crippled, fish streams destroyed, more spawning areas no longer viable, birds scared out of the area from the additional lost and clipped noise reduction of their natural feed. About half of the hunting area used by the locals will be unavailable, which I'm sure the loggers will take advantage of.

When does the greed or whatever is motivating the Politicians and/or Forest Service to cut clear and burn what is left of the "high volume" forest on Public Lands? Over 70% is already gone, it took 50 years to cut what should have lasted for at least 150 years (to be a sustainable harvest). And the rhetoric about "jobs for Alaskans" and "helping the Alaskan

economy is hog wash. At the Corner Bay Logging Camp, Tenakee Anlet, the Company brought in everything by Barge, Boat and plane, including the loggers from South. Alaskan loggers, including those living in Tenakee were refused employment. No one from Comp was even allowed to go to Tenakee (2 miles away) on pain of being fired. The only exception to that rule was when we had our big fire. They were sent over to help put it out, but we got a bill from them for every minute they put in, man and machine. Just when are you going to stop using taxpayer money to subsidize the cutting down of forests on Public Lands, especially at the present unsustainable rate? For unknown millions of dollars a year? Why have you all shut ignored alternatives that would be more conducive to small operators pursuing value added "operations". We have at this time one mill in operation and another mill almost ready to cut. These small operators would selective log, which is a much more acceptable method, it would be sustainable would put money in the local economy (and Alaska) the local (out of state) outlets, which have contributed to the high grading of the forests (on Public Lands) with the participation of the Forest Service, turning the lower grade unwanted trees. A

February 10, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, Ak. 99835

Dear Mr. Franzel:

This letter is in opposition to the Finger sale timber sale preferred alternative "B" for the following reasons:

1. There is no discernable market for the timber in this sale, especially in light of the closure of pulp mills in Sitka and Ketchikan. 7-4
2. This sale would add 21 more miles of road and reconstruct another 13 miles. This is contrary to a "no new roads" initiative that is taking place in the rest of the U.S. National Forest system 3-1
3. The associated logging camps, log dumps, helicopter activity and other associated activity would disrupt established guides, small charter operators and subsistence activities in this area. 2-1
4. This proposed sale, as well as other planned sales in this area, would negatively impact wildlife and other recreational and subsistence activities in this already ravaged area. Every major watershed in Tenakee Inlet has already seen clearcuts.
5. The large scale clearcutting in this proposal is not compatible with the chosen lifestyle and economics of Tenakee Springs, the town that would be most affected by extensive logging, and a place that has gone overwhelmingly on record as opposed to such large scale sales in its area. 7-4

As a frequent visitor and former wildlife guide in this area, I would urge the Forest Service to adopt the NO ACTION plan in this area and give this area a much needed chance to recover.

Thank you for this opportunity to comment.

Sincerely,



Jerry Dzugan
617 Kadian B-33
Sitka, Ak. 99835

cutbacked for years the smoke from the burning pile at the Corner Point Camp. And I ask why, if the trees were bad enough to burn why were they not left ~~in~~ ^{there} to fertilize the next generation of trees? Did they sell to increase the value of their take? Keeping the log volume down and the quality up? Burning so they could cut more timber to fill a quota? Alaska is being treated like a third world country where by we are being used as a raw material source, and I think that stinks

Frank Davis
P.O. Box 596
Tenakee Springs
Alaska, 99841

907-736-2224 phone
907-736-2229 fax

Jan Eagle
P.O. Box 67
Tenakee Springs, AK 99841

February 28, 2000

Jim Franzel, Sitka District Ranger
USDA Forest Service
204 Signaka Way
Sitka, Alaska 99835

Dear Jim,

Please accept my comments on the Finger Mountain EIS

I object to building roads and clearcutting the old growth in the roadless areas.

The areas in the proposed Finger Mountain Sale are important for subsistence hunting and fishing and the EIS and the sale will be detrimental to these important uses. 2-1

In no circumstance should the sale allow for log dumping into the water and all alternatives should provide for the placing of the logs directly onto barges. 4-1

This sale should explicitly take into consideration previous sales and proposed sales in Tenakee Inlet so that the total impact of logging on Tenakee Inlet and Tenakee Springs is adequately addressed. For instance, separating the effects of the Indian River Sale and the Finger Mountain Sale will end up with an inaccurate EIS for both. 11-1

As a cutting alternative I am in favor of the CCC ALTERNATIVE -- this was developed to be a practical response to local economic needs and should be selected. 5-1

Thank you for the opportunity to comment


Jan Eagle

1009 Lewis River Rd SP-5
Woodland, WA. 98674

Dear MR. FRANZEL.

I'm writing you in regards to your proposed clear cut timber sale near Tenakee Springs in the Tongass National Forest.

The devastation to wildlife, marine life & human life would be awesome. Why do you want to destroy the natural beauty of the area? 11-1

The Ruination of fishing & hunting activities, sport & subsistence alive, with the logging, logging camps, helicopter traffic, LTFs & Noise are wrong. 2-1

I'm in favor of Alternative "A" in the Forest Service Plan

No Action

Thank you

Karen Emery &
Mary H. Felt
Concerned voters

Dear Friend,

February 3, 2000

We are writing to you concerning an issue that is extremely important to the people of ~~Tenakee Springs, Alaska~~ We are the small community (pop. 96) in Southeast Alaska who resisted the invasion by a large tour ship a couple of years ago. You and 79 other people from across the U.S. and, even Europe, wrote to us after reading about our action in the newspapers. We deeply appreciate your response and encouragement. As a result of our resistance, that ship and others will no longer call at Tenakee Springs.

Now we would ask you for an additional bit of your time to help us with another urgent matter. The U.S. Forest Service is planning a large clear-cut timber sale in the immediate vicinity of Tenakee Springs in the Tongass National Forest. These clear-cuts would affect the beauty and pristine quality of our environment forever and would be subsidized by your tax dollars. The continued destruction of our old-growth forests is having devastating effects on our wildlife, our economy and our sense of well-being.

The Forest Service has released the Draft Environmental Impact Statement (DEIS) for the proposed "Finger Mountain" timber sale. The name of this sale is misleading since all of the proposed logging would occur in Tenakee Inlet at Crab Bay, In-between Creek and the drainage immediately West of In-between Creek in the vicinity of Little Seal Bay.

The comment period on the DEIS for the proposed timber sale is now open and the deadline for public comment is February 28, 2000. It is very important to make any comments you may have before the deadline.

The Forest Service's preferred alternative ("B") proposes to cut 21 million board feet of timber from 936 acres, to build 21 miles of new road and to reconstruct 13 miles of existing road. The proposal includes log transfer facilities (LTFs) at Crab Bay and In-between Creek, a logging camp at Crab Bay and a floating logging camp in Seal Bay. **3-2** Alternative "B" includes huge clear-cuts on the face of the mountain directly across from Tenakee and would severely impact the currently pristine drainage in the vicinity of Little Seal Bay.

WHAT YOU CAN DO:

Write to the Forest Service at:

James Franzel, District Ranger
Attn.: Finger Mountain EIS
204 Signakwa Way
Sitka, AK 99835
Fax 907-747-4331

SOME POINTS TO COMMENT ON ARE:

Cumulatively, the logging, logging camps, LTFs and all of the associated marine and helicopter traffic, would have ~~profound adverse effects on sport and subsistence fishing and fishing activities~~ on all of the south side of Tenakee Inlet from Corner Bay to Long Bay. This area is heavily relied upon by Tenakee residents and visitors from other communities.

The cumulative effects of this and 4 other timber sales (Indian River, Eight Fathom Blight, False Island and Saook Bay, all within 20 miles of Tenakee Inlet) would have a devastating impact on tourism and sport and commercial fishing businesses that utilize Tenakee Inlet.

It is generally acknowledged by the Forest Service's own scientists and by many other scientific studies that ~~clearcutting is harmful to wildlife~~.

Over the years, Tenakee Inlet has been heavily impacted by timber sales and logging operations over its entire length. Because of this and the direct adverse effects of this sale, including the noise, visual impacts and habitat destruction, virtually all of the residents of Tenakee are ~~in favor of alternative "B" in the Forest Service plan, NO ACTION~~.

One more thing you can do is to write your congressman and senators and encourage them to support the inclusion of the Tongass National Forest in the Forest Service's proposed Roadless Act Policy.

We hesitate to impose upon you, but we are so small and the Forest Service and timber industry are so big, and we need all the help we can get. Thank you in advance for any help you can give us.

Sincerely,

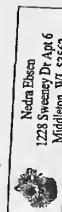
Joan McBeen
Joan McBeen

Marilyn Taylor
Marilyn Taylor



2-11-00

Please read and support these views.
Nedra Ebsen



Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, AK 99833

24 February 2000

Dear Jim:


The following are my comments on the Finger Mountain Draft EIS dated December 1999.

At this time the only logical choice of Alternatives is Alternative A (No action). I feel strongly about this for several reasons, any one of which would be sufficient to not proceed with the proposal to cut trees in the sale area.

Briefly my reasons for selecting the No Action alternative include the following:

1. All of the action alternatives involve building and leaving open more logging roads. At this time the issue of preserving unroaded areas is being considered on the Nationality and no unroaded areas on the Tongass should have new roads built until the issue is settled. Additionally, no more roads should be built until or unless guarantees are in place to take care of the present road system on the National Forest. 3-1
2. Important fisheries, wildlife, and other subsistence values would be permanently damaged by the proposed logging. I say this without hesitation because of the emerging realization that removing the old growth forest in fact reduces the biological productivity of the entire watershed. Until this reduction in biological productivity has been scientifically tested and measured we must stop logging on significant subsistence and fisheries resource areas. 3-1
3. The use of Tenakee Inlet area for subsistence will only increase with growth of the local human population. The increase will accelerate with the advent of the new proposed rapid ferry system—Tenakee will be readily accessible to people from Juneau for example. 2-1
4. The No-Action alternative gives us time to resolve many issues without precluding logging in the future if market needs develop and if acceptable methods are proven. The only safe thing to do now is adopt the No-Action alternative.

Thank you for the opportunity to comment.


Robert J. Edlin
Box 2966, Sitka

Attn: Fred Salinas USDA Assistant Forest Supervisor

Re: Comments on Finger Mountain timber sale DEIS

We oppose all action alternatives for the Finger Mountain timber sale with the exception of alternative A (the no action alternative). The damage to our business will be extensive and will potentially force us to close. We are just one small company, however when you add up all the potential losses to businesses in the Tenakee area it far exceeds the value of a short term logging operation. Historically logging operations have contributed very little to the economy of Tenakee either through jobs provided to residents or dollars spent by loggers in local businesses.

The loss to wildlife habitat and degradation of riparian streams and rivers is a foregone conclusion. The Forest Services states in the DEIS under Unavoidable Adverse Effects that "Implementation of any action alternative would cause some adverse environmental effect that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources". The people who come to fish with us do not want to see the scenery destroyed, they do not want to hear the peace and quiet shattered by the noise of helicopters flying overhead or the sound of jake brakes applied by logging trucks or the sound of chainsaws. Our clients come from all over the United States, Europe and Asia and find Tenakee Inlet to be an experience they cannot get anywhere else. 3-2

Logging has already taken a heavy toll in Tenakee Inlet. Blow down after harvest in alleged buffer zones will leave these wildlife areas, streams and rivers without protection. An aerial survey of the Indian River watershed conducted by ADF&G in 1995 showed that blow down has occurred in 60% of the past harvest units and several riparian buffer strips (nine of eighteen units in Indian River, five of eight units in S. Freshwater Creek and six of six units in the Ten Mile Creek). This clearly demonstrates that buffer zones do not work. In my experience (river fishing guide for 22 years) with buffer zones that have been established on the rivers of the Olympic Peninsula last less than one year. The direct impact of logging has ruined river habitat to the point of having to list salmon and steelhead as an endangered species in Washington, Oregon, California, and Idaho. Scientific studies in Washington and Oregon clearly show that low flow conditions from the results of logging have a distinct adverse effect on fish populations. The Forest Services assertions as stated in Effects to Stream Flow [chapter 3 pg 34] that "cooler temperatures and greater summer and annual precipitation may reduce any long term reductions in low flow as compared to Oregon and Washington, where studies have shown low flows to be a problem" is only a wild guess. This can be easily refuted by examining annual precipitation levels on the coast of Washington State [80 to 110 inches annually] that far exceed precipitation levels in Tenakee Inlet [42 inches annually]. Logging will cause severe erosion and water quality problems associated with siltation and damage 6-1

to Karst and will create conditions similar to those in Washington, Oregon, California and Idaho where anadromous fish species have been listed as endangered. We should learn from the history of these mistakes. This effect will put the Forest Service in violation of the Clean Water Act and the ACMP.

The effects of logging on endangered species will be much greater than information provided in this EIS. The Forest Service states in chapter 3 page 29 pp2 of the DEIS that "Trumpeter Swans have not been reported to the area". Many of the residents of Tenakee have observed Swans in the Crab Bay, Seal Bay, and Corner Bay areas. A list of people can be provided who will attest to this fact. Swans frequently use these areas in the spring and fall and groups as large as 30 have been reported. Observations of these swans are historical and cover a period of 25 years. LTF and the associated marine traffic in the above-mentioned bays will have a detrimental effect. Swans frequently use the sites where the LTFs and camps are to be located. LTFs as well as the camps will have to be shut down in the months of April, May, September, October, and November to accommodate these birds. Humpback Whales are very sensitive to boat traffic and will be disturbed in their natural feeding areas. Tenakee Inlet is an extremely important feeding area for whales during the summer and draws many pods and individuals to feed in the nutrient rich waters. As many as seventy-five whales have been observed in the Inlet at one time during a single day during the fall. At this time whales are feeding to gain strength for the migratory trip to the Hawaiian Islands. Tug traffic, log rafts and recreational boats from logging camps will not be able to avoid contact and will in all probability violate the Marine Mammal Act by coming to close and putting an additional strain on these mammals. Marbled Murrelets are an extremely sensitive species that nest in old growth forest. The Forest Service points out that they are abundant. These birds were also abundant in the state of Washington at one time until the harvest of old growth timber has nearly wiped them out. If two or three nesting sites are found in Washington State now it is considered a high success rate for breeding. There is a need to protect healthy populations of endangered species. These birds need old growth forest to survive and any time you cut it down you reduce the chance for survival. All action alternatives will have an adverse effect on these birds and the Forest Service has not provided adequate scientific studies to show the exact impact of logging on these birds in Tenakee Inlet. The DEIS makes no mention of the effects of logging specifically from LTFs and camps on migratory waterfowl. Corner Bay, Sunny Cove, Seal Bay, and Crab Bay are all resting areas for Vancouver Canadian geese as well as Mallard, Widgeon, Teal, and Harlequin ducks. The Forest Service has not provided any information on what effects will occur on this major Alaskan flyway. We wonder why the Forest Service has not consulted with the USF&WS about what effects may occur to migratory waterfowl. This needs to be addressed. The results of cumulative effects must be addressed. The Forest Service has not adequately studied the effect of conducting two logging operations simultaneously in Tenakee Inlet. The Indian River Sale and the Finger Mountain Sale will have severe long-term cumulative effects on subsistence hunting and

fishing. Native Americans historically use Tenakee Inlet to gather subsistence. They have not been adequately informed as to the cumulative effects of these two logging sales. Meetings with the Forest Service may have been provided for the individual sales but no discussions have occurred on the combined effects of both the proposed Indian River Sale and the proposed Finger Mountain sale. Cumulative effects will also have a negative impact on subsistence hunting and fishing for all the residents of Tenakee. Many people rely on the deer population, which will be greatly decreased especially in the event of a killing winter.

Road maintenance is also at issue. The Forest Service has not adequately maintained current roads in the Finger Mountain sale-causing culverts to be clogged or destroyed causing harm to riparian areas, streams and rivers. If money has not been made available in the past for maintenance where will the money come from in the future? This is a direct question to the Forest Service and needs to be answered. Road closures may not be allowed if the current ruling in Idaho stands. Roads will have to remain open causing further damage and potential hazardous contact with wildlife, especially bears. How is the Forest Service going to address this situation? Again this is a direct question that we request the Forest Service answer.

The comment process is valuable, however we wonder what good it does. The proposed Indian River sale comments, which numbered seventy-four showed that seventy comments were against the recommended alternative that the Forest Service chose. This means that only four comments were in favor. The question must be posed to the Forest Service that if 95% of the comments are against this action alternative how can you proceed with this alternative against the will of the people? Again, this is a direct question to the Forest Service that we would request a specific answer to.

In closing we would hope that the points that we raise cause the Forest Service to rethink any decision to choose anything but Alternative A in the proposed Finger Mountain sale.

Sincerely,

Capt. Tuck Harry

Tuck Harry

Capt. Tuck Harry
Lisa Speno
Fishing Bear Charters
Tenakee Springs, AK

February 17, 2000

District Ranger Jim Franzel
USFS
204 Signaka Way
Sitka AK 99835

Re: Finger Mountain EIS

Dear District Ranger Jim Franzel,

As a professional fisheries biologist, I am concerned about the USFS's proposed Finger Mountain Timber Sale. As proposed, there would be too many clearcuts and too many roads built - adversely impacting the habitat of the several watersheds involved and potentially damaging the many anadromous streams in those watersheds. These streams are highly important producers of chum, pink, and coho salmon, for established commercial salmon fisheries occurring each summer in Tenakee Inlet. There has also been subsistence salmon use by permit in the proposed area.

6-1

Also of concern would be any proposed log transfer facility that would dump logs into salt water. Dumping logs has been shown to adversely affect bottom habitat and associated benthic species such as crab and shrimp. Tenakee Inlet has important commercial fisheries conducted each year for Dungeness crab, Tanner crab, and shrimp. There is also likely subsistence crabbing done in marine waters immediately adjacent to the proposed area.

4-1

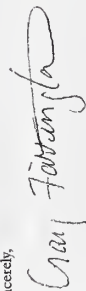
A winter bar herring fishery is also conducted in Tenakee Inlet on an annual basis, which could be impacted by any associated logging activities performed in the marine environment.

2-1

I would ask that you fully protect the established subsistence salmon and crab use in the immediate area of the proposal and to extend that protection to the commercial salmon, crab, and shrimp fisheries in the marine waters of Tenakee Inlet. You could do this by considering alternatives to the proposed sale, such as the CCC Alternative favored by the residents of Tenakee Springs. This logging alternative would have a much smaller negative impact on the habitat and the waters of Tenakee Inlet. It would both allow a timber harvest and protection of subsistence and economically important fisheries.

5-1

Sincerely,



Craig Farrington
Fisheries Biologist
Alaska Department of Fish and Game

FOREST CONSERVATION COUNCIL



February 26, 2000

James Franzel, District Ranger
Sitka Ranger District
201 Kadian
Sitka, AK 99835
FAX: 907.772.5895

RE: Comments on the Finger Mountain Timber Sale Draft EIS

Dear Mr. Franzel,

Please accept the following comments by the National Forest Protection Alliance (NFPA) and Forest Conservation Council (FCC) on the Finger Mountain Timber Sale draft EIS. These comments are made on behalf of NFPA, FCC, and our individual, business, and organizational members.

The Finger Mountain Timber Sale is a wasteful public expenditure that will create more social and economic harm to citizens of Alaska and the American public than good, and exacerbate rather than improve ecological conditions. The project will damage social and economic uses and values associated with natural forests (including forests that are affected by beneficial natural disturbance) for the benefit of the timber industry, even though non-timber uses and values are far more important to local communities and the regional economy. The project will jeopardize the viability of species that thrive in interior forests, naturally disturbed forests and old growth through clearcutting and road building, intervene in natural disturbance processes that are vital to ecosystem sustainability, and degrade water quality and watershed condition. The analysis on which the Forest has relied is flawed and based in a number of ways, rendering any potential decision arbitrary and capricious. Following are our specific concerns with the Finger Mountain Timber Sale and draft EIS.

Cumulative Effects. The Forest Service has failed to adequately address the cumulative effects of this project and others on Chichagof Island. The Forest Service Environmental Policy and Procedures Handbook sets the standard for analysis of cumulative effects:

11-1

"Individual actions when considered alone may not have a significant impact on the quality of the human environment. Groups of actions, when added together may have collective or cumulative impacts, which are significant. Cumulative effects, which occur, must be considered and analyzed without regard to land ownership boundaries. Consideration must be given to the incremental effects of past, present, and reasonably foreseeable related future actions of the Forest Service, as well as those of other agencies and individuals."

In the case of the Finger Mountain Timber Sale draft EIS, it is apparent the Forest Service has not fulfilled this direction. Instead, it has chosen to account only for the before and after conditions in the project area (see treatment of cumulative effects on recreation, pp. 82-83). Further, the Forest Service

FISH 1905 15, 15.1

Western Regional Office
P.O. Box 22488

Santa Fe, New Mexico 87502
(505) 986-1163

Southeastern Regional Office

P.O. Box 27628
Boca Raton, Florida 33427

(561) 347-0949

Mid-Atlantic Regional Office

3526 Firey Run Road
Linden, Virginia 22642

(540) 364-9651

has dismissed entirely the effects on such resources as old-growth from the cumulative impacts of past, present and future timber sales. Despite the fact, that several sales will be active at the same time on Chichagof Island, the USFS has totally ignored the cumulative impacts by simply claiming that the sales are not geographically related. Any way the USFS wants to geographically arrange the timber sales, they will all be reducing the old growth on the island dramatically and thus the viability of species dependent upon old growth. Further, the Forest Service writes off the dramatic declines in old growth over the next fifty years by invoking the current Forest Plan standards and guidelines requiring "much of the future harvest would be done as partial cutting rather than clearcutting (EA at pp. 3-11). How can the USFS make this assumption if it cannot even meet these standards and guidelines now? The USFS has run afoul of its obligations under FSH 1905.15.15.1 to analyze cumulative effects in the planning area. The Forest Service cannot simply fall back on the Forest Plan ROD and the Final EIS to account for cumulative effects. Finally, no Native American or other private timber harvest on Chichagof Island has been incorporated into the cumulative effects analyses, in direct contradiction to FSH 1905.15.15.1.

11-1

Cumulative effects are to be given full and adequate consideration at the project level. Several Issues receive no cumulative effects analysis at all. The Tongass National Forest is falling into a trend towards not adequately addressing cumulative effects. This is a larger trend, as evidenced by the recent findings of the USDA Office of Inspector General:

"the incomplete [cumulative effects] analyses resulted from Forest Service not including the required discussion of past, present, and reasonably foreseeable future actions and their effect on the project area's environment."

Socio-economics. The Finger Mountain EIS has taken a step in the right direction by incorporating an economic efficiency analysis. However, the economic efficiency analysis falls well short of including established and accepted methodologies of valuing non-market goods and services. The Forest Service has failed to adequately place value on any economic impacts outside of those directly associated with the agency and timber related employment. Instead it chooses arbitrary measures such as ROS classifications without any further discussion outside of a tabular display. No attempt is made to fairly evaluate recreation, subsistence, aesthetics, etc. and compare them to timber value. No value at all is attributed to jobs and income outside of the timber sector. As with other projects planned on the National Forests of Alaska and throughout Region 10, the Forest Service has failed to complete an economic analysis of the Finger Mountain Timber Sale that provides the public with a full and fair accounting of net economic benefits.

7-4

Forest Conservation Council has raised these economic issues in the context of numerous appeals in Region 10 (see for example Sea Level and Canal Hoya appeals) and provided examples of acceptable technique for evaluating non-timber values. We incorporate, by reference, these appeals for a more complete description of our issues on this subject.

Wildlife Viability. The Finger Mountain Timber Sale activities are likely to jeopardize the viability of species that find optimal habitat in interior forests, forests with well-developed structures, and forests naturally disturbed by wind and insects. These include threatened, endangered, and sensitive species, as well as management indicator species.

1-7

For many of these species, the Forest Service has no up-to-date population data describing population numbers, locations, and trends, nor monitoring data on which the agency can rely to determine that

² USDA Office of Inspector General Evaluation Report, 1999. Forest Service Timber Sale Environmental Analysis Requirements, Washington, D.C. No. 08801-10-A1. January 1999.

the actions proposed in the context of the Finger Mountain Timber Sale will maintain numbers and distribution of these species sufficient for insuring long term viability. The draft EIS instead relies on the TLMP to secure wildlife viability (EIS at pp. 3-6 to 12). This is a classic Forest Service shell game. The TLMP does not guarantee the long-term viability of several wildlife species, as assessed in the Finger Mountain DEIS, placing the burden to the site-specific mitigation and planning, however by referring back to the Modified TLMP these site-specific issues are avoided. Because the Forest Service has no population data for most species adversely affected by the proposed management activities, and because what data there is suggests that such species are declining and otherwise at risk, the Forest Service runs afoul of viability and diversity requirements set forth in forest planning regulations. 36 C.F.R. § 219.19 and § 219.26. Species for which the Forest Service must have population information to make viability determinations are threatened and endangered and Region 10 sensitive species, and in particular the goshawk.

1-7

Fragmentation. Habitat fragmentation will result from the Finger Mountain Timber Sale, and is an underlying cause of many of the adverse effects on native species. As such, habitat fragmentation deserves a rigorous analysis. Forest Service literature is replete with references regarding the adverse effects of fragmentation on forest habitats. Before the Finger Mountain Timber Sale decision notice can be signed the cumulative effects of fragmentation from this sale and other past and reasonably foreseeable future actions must be accounted for. The Forest Service has, in its possession, models and techniques for assessing the effects of fragmentation. One such model, the "Distributed Wildland Resource Information System" was developed in 1987 for use on the Forest Service GIS systems, and provides the Forest Service with the tools to evaluate fragmentation in regards to patch size, perimeter (edge) to interior ratios, and other variables. (Id) The Forest Service has applied such models in the past to gauge the effects of fragmentation in the context of timber sales affecting old growth pine and mixed conifer habitats in other regions. In the Augur Creek Timber Sale EIS on the Fremont National Forest in Oregon, for example, the Forest Service used its Mt. Hood National Forest Fragmentation Model to quantify the amount of interior and edge before and after proposed timber harvest.³ On the Payette National Forest, the Forest Service used a fragmentation model to assess the effects on interior and edge mixed conifer forest before and after the proposed Deep Copper Timber Sale.⁴

In the case of the Finger Mountain Timber Sale, the Forest Service has failed to apply any of these models, nor any technique for evaluating fragmentation and resulting edge effects.

1-1

Log Transfer Facilities and Marine Fisheries. LTFs have the potential of harming the immediate marine environment as well as the larger marine environment. Several petroleum discharges have been reported from LTFs and at least one has not met BMP 14.27.⁵ Further, marine bark deposition below LTFs has exceeded either thickness or continuous coverage standards according to the Alaska Water Quality Standards. No information is provided in the Finger Mountain Timber Sale draft EIS concerning the condition of LTFs in the area and in particular the LTF proposed for use. Further, the cumulative effects of three LTF operating in and around Peril Strait and Tenakee Inlet are certain to cause cumulative effects on the marine environment. Almost no analyses of the direct, indirect, or cumulative effects of these three LTFs operating simultaneously is provided, particularly on herring stocks

4-2


³ USDA Forest Service, Fremont National Forest, 1991: Final Environmental Impact Statement for the Augur Creek Timber Sale.

⁴ USDA Forest Service, Payette National Forest, 1990: Draft Environmental Impact Statement for the Deep Copper Timber Sale.

⁵ USDA Forest Service. Annual Monitoring & Evaluation Report for Fiscal Year 1998. Tongass National Forest

Finger Mountain Timber Sale Comments-4

Thank you for the opportunity to comment on the Finger Mountain Timber Sale. Please send FCC and NEPA the final Decision Notice and any supporting NEPA documentation.

Sincerely,

 Bryan Bird
 Forest Conservation Council
 Southeast Regional Office

2-25-2000

Mr. Strang -
 I'm writing to you about the proposed logging of the Tanabe area forests. Please DO NOT destroy this wonderful area by logging. It - with all the things needed to log it. Besides destroying the beauty of the land, I'm concerned for the people in the area as well as the wildlife there. Alaska's the only true wilderness left in this country. People like to live in these remote areas because of that fact. Please don't let this be taken away.
 Please - alternative 'A' is the best choice and only choice to keep Alaska the beautiful land that it is.
 Thank you
 Sincerely
 Sam & Don Fitzgerald
 175 Jones
 San Francisco 94134

CWGW 11331 Sundance Lane
Boca Raton, FL 33420

Tel/Fax (561) 482-1534

21 FEB 00

James Franzel, District Ranger
204 Siglinka Way
Sitka, AK 99835

Subject: Proposed Finger Mountain Timber Sale

Dear Mr. Franzel,

I wish to go on record as being vigorously opposed to the subject action, who really drafted the environmental impact statement? I can't believe that any rational, objective source could fail to realize the devastating impact of your alternative "B", not only on the quality of life at area residents, but the very subsistence of some through the catastrophic disruption of hunting and fishing activities and the wildlife habitats on which they depend. The noise pollution alone would wreck havoc, and together with the visual ugliness of the ongoing operations would deprive visitors such as myself from enjoying the peace and beauty of a national heritage that is itself becoming an "endangered species".³²

I cannot believe that there are not private interest groups pulling the strings. Your proposed timber sale has all the telltale signs of another *Fleeing of America*(NBC). For once, maybe Tom Brakaw will be able to report something before it happens.

Sincerely,

Charles W. Gattas
Charles W. Gattas

cc: NBC
30 Rockefeller Plaza
New York, NY 10112

cg/bp

21 FEB 00

Mr James Franzel:

I am writing in support of The Good people of Tenakee Springs, Alaska.

I am writing my support in favor of Plan "A" NO ACTION in the Timber Sale on the South Side of Tenakee Inlet from Corner Bay to Long Bay.

I also am writing against 4 other Timber Sales all within 20 miles of Tenakee Springs, ALA.:

- Indian River
- Eight Fathom Bight
- False Island
- Saook Bay

The logging, Logging Camps, LTF's, Helicopter Traffic and Marine Traffic will all have great Adverse effects on the wildlife, Marine life, and Morale of the people of Alaska. This "Clear Cutting" is a negative thing which has been ruining our planet. With Alaska, Northern Canada + Siberia, Russia being the very last Frontier on Earth, Mankind can absolutely NOT afford to cut 1 Single Tree from these precariously balanced Ecosystems.

I hope and pray that this beautiful Country will be left undisturbed.

Sincerely,
Joshua V. Smith

James Brangley
District Ranger Admin. Engineer/MTN EIS
204 Summit Way
SHTA, AK 99835

Mr. Fenzel -

It is my understanding that preferred alternative "B" proposes to cut 21 million board feet from 936 acres, build 2 miles of new logging roads and reconstruct 13 miles of existing roads in the Crab Bay, Mt. Britton-Creek area, plus to build a logging camp at Crab Bay and a floating camp in Seal Bay.

The combined effects of this sale (alt "B") and 4 other possible USFS sales in a 20-mile radius (Indian River, Pales Island, Eight Fathom, and 500E) just means more long term cumulative effects of clearcutting and destruction of wildlife-habitat and damage to fish streams.

Chikago Conservation Council in Tenakee object to these sales and as a new member I want to object as well.

There must be something that can be done to reduce or eliminate clearcutting in the Tongass and especially Tenakee what

Enough is enough

Mike Cummitt

141 Dashed Lane
Anchorage, AK 98510
Feb. 12, 2000

Dear Forest Service,

I am writing in regard to the Draft Environmental Impact Statement as a frequent visitor to the Tenakee Springs area & believe the environmental and tourist impact caused by clear cutting in this vicinity would be devastating. I pray that you will reconsider this natural beauty and not destroy what God has created.

Sincerely

Carol Hamilton



George Y. Harry III
4259 133rd Ave SE
Bellevue WA 98006

Page 1 of 5

Feb. 18, 2000

James Franzel
District Ranger, Attention Finger Mountain EIS
USDA Forest Service
204 Sigamaka Way
Sitka, AK 99835

Dear Sir:

My comments on the EIS are based on my experience as a biologist with 10 years of research and management of the commercial fisheries of Oregon, 10 years of research on fisheries of Alaska as Director of the NMFS Aleut Bay Laboratory and 10 years of research on marine mammals of Alaska as director of the National Marine Mammal Laboratory. I am now retired and return to Tenakee Springs each summer as a tourist. In spite of my scientific background, my concern is not mainly about the science of the DEIS. I consider Tenakee Inlet to be a unique jewel even in an Alaska abundant with outstanding recreational opportunities. I urge that the inlet be protected from any type of exploitive commercial activity such as logging or mining.

My fisheries and marine mammal responsibilities have taken me to almost all parts of Alaska, usually with a fishing rod. I have been in no area that I enjoy more than Tenakee Inlet and Tenakee Springs. A few regions of Alaska have some of the attributes which make Tenakee Inlet unique, but I have seen none with all the exceptional attractions of this inlet.

The inlet is now free of any commercial activity which would detract from the pleasure of an outdoor experience. The only pollution from sound is the occasional float plane landing at Tenakee Springs, and this somehow is more reassuring than annoying.

The endangered humpback whale commonly feeds in the inlet during the summer

E-mail: GYHarry@AOL.COM

Phone: (425) 641-2948

months, and a few may be seen in all seasons. One of the most spectacular displays of nature is the bubble-net feeding of humpback whales. The fortunate individual who has seen these giant mammals, after encircling their prey with bubbles, erupt from the depths through the sea surface with mouths agape will hold this memory forever. I believe that transportation of logs could be deleterious to the feeding habits of this endangered species, and activities which interfere with the recovery of an endangered species are unlawful.

4-2

I have fished for salmon in the Kadashan River with grizzly bears as my companions only two hundred yards downstream. Such an experience is possible in other rivers of Alaska, but it is rare indeed to enjoy the sight of humpback whales, or killer whales and of course seals and perhaps a sea lion while crossing the inlet to the Kadashan or another river for an outstanding fishing experience. In the autumn the pristine estuaries of Tenakee Inlet invite flocks of ducks, geese and swans to rest and feed on their migration to a warmer climate. At the same time coho salmon at their peak of size and energy begin their fresh water spawning migration and become one of the premier sport fisheries of the world. Here the sport fisherman can lay aside his fishing rod pick up his shotgun and walk into an intertidal zone abounding in waterfowl.

3-2

The hiker taking the trail from Tenakee Springs to Indian River and beyond walks in the quiet of the forest, undisturbed by sound pollution. Pausing on the Indian River bridge, the hiker might watch hundreds of pink salmon fighting toward their spawning gravel. Grizzly bears likely are feasting on salmon and storing fat for their long winter sleep. The hiker won't be concerned about the sounds of automobile traffic. There are no cars or even roads in Tenakee Springs or all of Tenakee Inlet except for a few mostly abandoned logging roads. After a day of outdoor activity comes the pleasure of relaxing in the bathhouse enclosing the basin of hot spring water that gives the town its name.

The endangered humpback whale is not the only marine mammal seen in Tenakee Inlet. Steller's sea lions haul out rocky ledges, and although this species is not endangered in SE Alaska, in other parts of the state it is severely depleted and its status is cause for concern. Harbor porpoises are frequently seen in the inlet, and little is known about the status of this species. Dall's porpoise and killer whales are common.

The town of Tenakee Springs is a pleasure to visit. You can stroll down the main and

only street, which is not a street at all but rather a wide path, with no concern for traffic because there isn't any. Stop in at the only mercantile in town where you can buy anything you need from food to bolts and if the store doesn't have it you probably don't need it. You might visit Rosie's for an excellent hamburger or stop at the bakery for coffee and a fresh pastry.

Why am I discussing this miscellaneous information about Tenakee Inlet and Tenakee Springs? The reason is that I believe the inlet should be preserved in as natural a state as possible which precludes logging the surrounding area. Preservation I am convinced is the best and highest use of the natural wonders of Tenakee Inlet.

The DEIS for the Finger Mountain Timber Sales gives much scientific and economic information compiled by competent Forest Service employees. Nevertheless I have a few comments about the report.

On page one of the summary, under the heading Decisions to be Made, is the statement that the decision will include timber volume available, location of timber harvest, and other considerations but does not state that the option of no harvest will be valued in the decision. Does this mean that the decision to harvest has already been made?

In several parts of the DEIS relating to consequences of actions the word "may" is used rather than "will" for consequences that are inevitable. For example, on page 3 of the summary is the statement that, "timber harvest and road construction may impact scenic views". The correct wording is "will impact scenic views." Another example is on p.11, Issue 3, which states that management for timber production may detract from the scenic nature of the landscape. Again the wording should precisely state that timber production "will detract" from the scenic nature. Other examples of this type are found on page 37 in the discussion on sediment. Statements are made that roads "can be" a source of sediment and erosion "can occur" on roadbeds. Roads are a source of sediment and erosion does occur even with good planning and the DEIS should not equivocate about this problem.

The discussion of the humpback whale as an endangered species names several important feeding locations and states that none of these are within or adjacent to the project area. It does not include the Tenakee Inlet as an important feeding area. The Tenakee Inlet region is very important to the nutrition of humpback whales. Prey species for these whales are abundant.

Especially during the summer months the whales are common and can often be seen displaying their unique bubble-feeding technique. Any activity which interferes with the recovery of this endangered species is a violation of law, and such activity could be associated with a logging operation. The further statement is made that no direct or indirect effects on whales are anticipated. Perhaps the Forest Service does not anticipate harmful effects on humpback whales, but I know of no evidence to support the statement.

The discussion of the trumpeter sparrow includes contradictory statements. The first paragraph states that they may be present in the project area and the second paragraph states that swans have not been reported in the project area. Trumpeter swans are present in the project region and must not be subject to activities which will have an adverse effect on their abundance.

To my surprise the Harlequin is the only duck mentioned. Vast numbers of ducks use the estuaries of Tenakee Inlet during migration. These estuaries are important to the conservation of several duck species and the DEIS should include a discussion of the potential effects of logging on ducks.

On page 34 of the section on environment and effects stream buffer requirements are mentioned. Buffer zones are critical to the survival of salmon and trout. Buffer zones have often been found to be inadequate or nonexistent. The DEIS should include a discussion of the adequacy of recommended buffer zones and the extent to which these zones conform to recommendations of fishery biologists. I have serious doubts that the designated 100 foot buffer zone will provide sufficient protection against degradation.

The last paragraph of page 44 of the section on the environment states that the National Forest Management act prohibit activities that would seriously and adversely affect fish habitat. The adverse affect must be serious according to this Act. In the 50 years that I have been associated with salmon research and management I have seen stream after stream destroyed as salmon habitat with little or no concern because each event was believed to be minor. The accumulation of these "minor" events has resulted in salmon, steelhead and cutthroat trout being declared endangered in many of the rivers of Washington, Oregon and California.

My knowledge of the economics of logging operations in SE Alaska comes mainly from reviews in the media, some of which are based on Forest Service information. Many reviews

Jim Healey
90 Spruce St.
Juneau, AK 99801

February 20, 2000
Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel:

I am in favor of Alternative A for the Finger Mountain Timber sale in Tenakee Inlet. I think that the "no action" option for the area is the most sound decision for the people in Tenakee Springs and visitors to that area. Tourism already provides an economic base for many of the residents and that needs to be reflected in the value of alternative A.


I visit Tenakee frequently and have seen the scars left by clear cutting in the Crab Bay area cut 23 years ago and therefore disagree with your statement that "visual impacts would lose their stark contrasts with the surrounding forest within five years of completion". The visual effects as well as the effects on wildlife last for decades. Your plan to "clearcut with reserve" would not make my visits any more enjoyable than your plain clearcuts would. Leaving 15% of the stand does not make the area any more appealing to me.

3-2

The residents of Tenakee have stated their objection to further logging in the Inlet. I therefore support their choice of Alternative A as the preferred alternative for this sale.

Thank you for allowing me to comment on this important issue.

Sincerely,



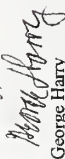
Jim Healey

conclude that the costs to the federal government incurred by logging operations exceed profits to the government. The result is a subsidy to the timber industry. The DEIS should elucidate this question so that the reader will know whether citizens will subsidize an operation to which they may be opposed.

7-1

Because Tenakee Inlet is such a special place, and because of potential environmental problems and uncertainty about the economics of timber harvest, I recommend Alternative A, no harvest.

Sincerely,



George Harry

P.O. Box 475
Hoonah, AK 99829
February 18, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel:

I am writing to express my horror at the proposed timber sales for Tenakee Inlet.

I especially implore you to not build roads and clearcut old growth in existing roadless areas (including Little Seal Bay) – that has been happening in too many parts of North Chichagoff, yet to date Tenakee Inlet has been spared. In addition, subsistence and sport use of deer in the Inlet need to be protected due to the recreation and subsistence based economy of Tenakee Springs. Dumping of logs in the Inlet also needs to be prohibited. Finally, timber sales for the area should respond to the economic needs of Tenakee Springs. The CCC alternative would do just that: this citizens' alternative shows participation in the EIS process by the community which should be rewarded.

As I write this letter, I can view the numerous clearcuts around Hoonah. In fact, logging has become one of the major uses of the area in recent years – and the scars from that emphasis won't heal in my lifetime. North Chichagoff Island has already been hit too hard with industrial clearcutting. It has been nice to go kayaking in Tenakee Inlet where the watershed has not been so ravaged. Don't repeat the mistakes of Hoonah made by both your agency and the Native corporations – protect Tenakee Inlet.

Sincerely,



L. Stephanie Harold

Dear Sir,

I am very concerned with the proposed logging activity in Tenakee Inlet. I own a house in Teenakee, but currently reside in Haines. My family makes several trips there each year to enjoy the natural beauty and the peace and solitude that Tenakee has to offer. It upsets me to know that the forrest service has targeted Tenakee for so much logging. When I lived in Tenakee, 1979 thru 1982, logging was going strong. I return every year to hunt deer in the inlet, and I have noticed a marked decrease in the number of deer in this area. It is getting harder and harder to hunt there. One of the problems is the reduction of old growth forrest. The deer need the old growth to survive the winter. I have seen the forrest service deer counts, and they say there more deer than ever before. I for one do not think this is the case. Pellet counts are just not accurate. Another problem is the access to remote areas that is left after logging. People are able to use four wheelers on logging roads and thin out deer herds that were never accesible before. This doesn't do the general herd any good at all. A good example of this is the in-between area which is slated to be logged again. About ten years ago, when the road was open, it was not very good hunting. Since that time, as the road began to overgrow, the hunting has become increasing better. As easy access decreased, the deer population increased. I have first hand knowledge, because I like to hunt this area.

I am not sure why Tenakee has been picked so much for timber sales. There must be many other areas in southeast that are not the focal point of recreation for so many people as Tenakee is. Could it be that these other remote areas are to costly to log? Would logging companies have to spend too much to set up operations there and therefore not turn as much of a profit? I am not sure of the reasons. I think the forrest service needs to look at needs and wishes of a community where they are about to make a big impact. Tenakee does not wish or need to have any more logging in Tenakee inlet.

Thank You,

Larry Hura
P.O. Box 475
Haines, Alaska 99827

e-mail: hural@seaknet.alaska.edu

To: Jim Franzel, District Ranger
USDA Forest Service -- Sitka, AK

From: George and Lynne Jensen
P.O. Box 87 (907) 697-2259 or
Gustavus, AK 99826 email = gjensen@seaknet.alaska.edu

We would like to comment on the Forest Service's proposal for logging in the Tenakee Inlet area.

It is imperative that you listen to the people who live in the Tenakee Inlet area, specifically in Tenakee Springs, and include their guidelines and concerns in your plan and in the EIS. The alternative that the local people arrived at (the CCC alternative) encourages selective logging, avoiding roadless areas and providing small scale logging and milling opportunities for local operators, which would embrace the new philosophy of "value added" forestry practices for the Tongass. 5-1

Both the Indian River Timber sale and the proposed Finger Mountain Timber sale include too many clearcuts in old growth timber stands and reckless road development into valuable wilderness areas (especially Little Seal Bay). These sales also endanger the local economy of fishing, subsistence, hunting, tourism and recreation. 1-1 11-4

We would also like to request that any logs harvested from any sales in the Tenakee Inlet area be placed on barges. Dumping logs directly into the water will endanger marine life as well as cause a hazard to boaters and float planes in the area. 4-1

Having taught at a logging camp (Freshwater Bay) for 2 years, we have seen the destruction logging has done to the old growth timber stands through the "high-grading" practices done by the operators there. We have seen how logging roads open up wilderness areas to illegal hunting by camp residents and others who have easy access to wildlife habitat. We have seen the landslides caused by logging on hillsides too steep to hold the soil after all the trees have been stripped away and the harm caused to salmon streams by road building and erosion.

Please do not let this happen to the areas around Tenakee Inlet. The people who live in Tenakee Springs and around the Inlet deserve better than that.

To Sitka Ranger District, 2-22-2000
Tongass National Forest,

Re: Finger Mtn Timber Sale

Does a bunch of people have to get arrested so that you'll take Finger Mtn off the chopping block? This is getting old, you're not listening - no more commercial timber sales for clear-cutting on the Tongass - you've destroyed enough by mismanagement. 9-1

Please - focus the talents of the people in the USFS elsewhere - like recreation...

Thanks - Claire Johnson
1705 SMC
Sitka

Re: Finger Mt. EIS

2/20/00

Dear Mr. Fränzel;

As long time home owners near Tenakee Springs (Columbia Cove) and part time residents we are making our comments based on our support of and admiration for the year round residents of Tenakee. Personally we use the area for a variety of subsistence activities including deer hunting, fishing, crab and shrimp harvest and blue and cranberry picking. Through the years we have explored the entire inlet by foot and skiff — a wonderful experience we wish we could share with others. We also use the area for commercial fishing occasionally and are well aware of the impact of clear-cutting on salmon watersheds.

We ask that you seriously consider the following:

- ① deny alternative B and work with residents of Tenakee Springs to find a more modest proposal 61
- ② prohibit the dumping of logs into the water on any upcoming timber sale — we all know what this does to the marine environment. 61
- ③ make sure that any proposed timber sale makes economic sense and that it is not another taxpayer subsidy. 73

4. eliminate any new road building — proposed roads will just increase the long term damage to an area heavily used by local residents for subsistence, tourism etc. There will be only economic damage to Tenakee Springs no benefits. 111
5. This sale should be considered as part of all the other proposed sales in the area — a piecemeal approach lacks vision or recognition of the cumulative effects. 111

Thank you for reading our thoughts.

Sincerely,
Moe & Amy Johnson

Moe/Amy Johnson
423 Versteuila
Sitka AK

FROM: jodarienzo / INTERNET
DDT1=RFC-822; DDT1=jodarienzo@hotmail.com;

TO: fingermt / r10, chatham

Part 2

ARPA MESSAGE HEADER

Part 3

Dear Mr. Jim Franzel:

I am addressing this letter to you concerning the issue of the logging of Tenakee Inlet. I do not agree with your proposal to do a timber sale in this area. I think we should protect as much wildlife resources as we can.

The area planned for cutting is located on several watersheds important to the residents of Tenakee Springs. Logging the deer habitat there would make the deer population drop. This is just one of many problems the we would be faced with if this proposal passed.

2-1

Although I am not a member of an Important Company, a company that would give you money to log this area, my opinion matters just as much. For I am a member of the community. A younger member. As I grow older, if logging continues, where will the virtues that make up Alaska be? In Alternative D the proposed harvest acres is 1, 026. That is one thousand and thirty six acres of timber that would be logged. 1, 036. That is a huge number. Too huge.

Of the timber cutting alternatives you have proposed, alternative F would be the least damaging, but I do not think any new roads should be built. Those roads would damage important resources for fisheries and wildlife. I also think you must question why these roads are being built. I really do not feel they are for any necessary reasons. The people of Tenakee Springs are happy with their amount of roads as far as I understand. Building these roads because of a timber sale is a waste of time, money, and land.

3-1

We cannot change the past, but we can help change the future by not logging the watersheds in Tenakee Inlet. Thank you for your time and patience.

9883 SE Ladera Court
Gresham, Or 97080
February 24, 2000

James Franzel, Forest Ranger
Attn: Finger Mountain EIS
204 Siglinaka Way
Sitka, Alaska 99835

Re: Tenakee Springs, AK, clear cut logging

I am writing to you to ask that you reconsider the plans you have for clear cutting in the area of the Tenakee Spring, AK.

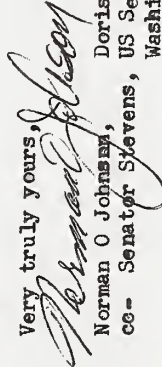
9-1

These clear-cuts would affect the beauty and pristine quality of the environment forever and would be subsidized by the tax dollars of the citizens of the state of Alaska and by the citizens of the other United States. The continued destruction of the old growth forests is having a devastating effect on all the wildlife, the economy and of the well-being of all the citizens of the states.

7-1

We strongly recommend and request that you re-consider this action in the interest of all the citizens of the states.

Very truly yours,


Norman O Johnson, Doris J Johnson
co-Senator Stevens, US Senate Building,
Washington, DC

Representative Murkowski
US House of Representatives,
Washington, DC

KETCHIKAN GATEWAY BOROUGH
Office of the Borough Manager • 344 Front Street • Ketchikan, Alaska 99901

Corrianna Zimmerman
Borough Manager
(907) 228-6625
Fax: (907) 247-4625

February 28, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signakka Way
Sitka, Alaska 99835

Re: **Finger Mountain Timber Sale(s) DEIS**

Dear Mr. Franzel,

The Ketchikan Gateway Borough ("KGB" or "Borough") has reviewed the Draft Environmental Impact Statement for the Finger Mountain Sale(s) in the Sitka Ranger District dated December 1999. The KGB, a second class borough and municipality organized under the laws of the State of Alaska, is located in the Tongass National Forest and is a timber-dependent community and a recipient of timber receipt revenues pursuant to 16 U.S.C. § 500. KGB residents engage in varied activities within the Tongass National Forest, including recreation activities such as hiking, camping, fishing, hunting and personal use timber extraction.

The comments offered herein generally reflect past direction of the Ketchikan Gateway Borough Assembly toward this issue. However, this particular request did not provide sufficient time to have the Assembly approve these specific remarks. The Assembly will be presented these comments at their regular meeting of March 6, 2000. If a majority of Assembly members wish to modify any of these comments, a subsequent letter will be forthcoming.

As a general matter, the KGB supports the proposal to harvest approximately 21 million board feet of timber from the project area on Chikbagof Island. The KGB believes that the Forest Service should make the maximum utilization of timber sale opportunities in areas of the Tongass that were designated Timber Production by the recently revised Tongass Land Management Plan so that manufacturing facilities in Ketchikan and elsewhere in Southeast Alaska have an opportunity to purchase sufficient timber to meet their needs. Furthermore, the KGB urges the Forest Service to design timber sale projects such as the Finger Mountain project to ensure that resulting timber sales return sufficient value over costs to be attractive to the industry.

7-4

24 February

Dear Mr Franzel,

I am writing with regard to the Finger Mountain timber sale.

I believe the benefits to keeping this parcel of the Tongass National Forest intact far outweigh the short-term one time benefits of a timber sale. The impacts of removing more old growth trees and building more roads to accomplish this project will further fragment the fragile temperate rainforest ecosystem. We, as a nation, have allowed far too much irreversible damage to occur on the Tongass and other national lands that will take generations to mend or maybe never. No more old-growth timber sales and no more new roads!

Thank you for accepting this as public comment to the Finger Mountain timber sale EIS

Rebecca Joyce

Statement of Purpose and Need

The Ketchikan Gateway Borough recognizes that this sale project is a revision following litigation of earlier work. Due to intervening forest plan changes and industry changes, the remaining available volume in the Crab Bay/Tenakee Inlet area is extremely important in supplying sufficient timber to satisfy the needs of Southeast Alaska's forest products manufacturing facilities.

8-1

The Finger Mountain Timber Sale(s) will provide important pipeline volume to support Southeast Alaska's existing and future timber industry which contributes manufacturing jobs to the regional economy, as discussed in Appendix A (pp. 6 and 7). It is therefore an important part of the sales program proposed by the Forest Service to satisfy the requirements of TTRA §101. As pointed out in the chart and accompanying narrative on page A-9, up to 15 mmbf of the ASQ must come from the Sitka Ranger District on an annual basis under provisions of the current Tongass Land Management Plan. This includes 12 mmbf of NIC-1 timber. The current schedule of proposed actions makes it clear that volume from the Finger Mountain project will be critical to achieving this goal.

The KGB supports the "Purpose and Need" statement for the Finger Mountain Timber Sale(s) project set forth in Chapter 1, pages 4 & 5 of the DEIS and supported by the narrative in Appendix A, particularly the following:

- "manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained basis and in an economically efficient manner,"
- "seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle,"
- "provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska," and
- "support a wide range of natural-resource employment opportunities within Southeast Alaska's communities."

8-2

The KGB is concerned about a statement contained in the discussion of the project's relationship to the Forest Plan under the subheading, "Timber Production" on page 5. The management objectives include the goal, "seek to reduce clearcutting when other methods will meet land management objectives." The KGB believes this should be restated to include economic and silviculture considerations, including the goal of maximizing regeneration on treated acres.

General comments on timber sale economics

- Among other factors, the Forest Service should consider logs per mmbf, volume per acre and recovery per mile of road when evaluating the economics of each timber sale project, since viable economics is as important an issue as volume in making these sales attractive to potential purchasers.

7-3

Visual Resources

The KGB notes that the Preferred Alternative does not anticipate harvest within areas designated "Modified Landscape" in the project area, except possibly in small portions of Units 2040A and 2040B. However, if the final project design does include harvest from lands so designated, the Forest Service should attempt to address VQOs in ways that have the least impact on the productive capabilities of those areas. This attempt should include non-significant plan amendments, moving acres from "Modified Landscape" to "Timber Production," where on-the-ground evaluations indicate that the boundaries have been misplaced and the foreground acreage in question is not visible from "popular" roads, trails, communities, etc. This approach is consistent with Plan implementation discussions held between the Forest Supervisors and industry representatives in 1997 and 1998.

3-2

The KGB suggests, to the extent it is consistent with timber sale economics, that visual concerns be partially addressed by designing cutting units to reflect natural contours in the terrain, thus avoiding square, patch-like unit patterns where it is economically feasible to do so.

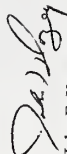
KGB supports Alternative B as the Preferred Alternative

Alternative B provides TLMP-required environmental protection and mitigation as well as what appears to be a potentially economic timber sale. Multiple use considerations are more than adequately addressed in Alternative B. Wildlife, fisheries, subsistence, cultural, visual and recreational concerns are protected in this alternative.

The DEIS indicates that Alternative B will return significant value to the treasury while also providing much needed timber volume. Alternative B is structured well for future sales catering to the needs of small operators to the extent that such operators have access to the south Tenakee Inlet area.

The KGB appreciates the opportunity to participate in the planning of the Finger Mountain Timber Sales(s) project. Should you have any questions concerning any of these comments, please contact me at (907) 228-6625.

Sincerely,



John F. Hozey

For the Borough Manager

cc: Mayor Shay and Assembly Members
Susan Dickinson, Planning Director

2-23-00

Dear Sir:

My wife and I just returned from a two day stay at Saltery Bay on our Coast. We have been going to Saltery Bay for the last 4 years when ever we have free time. It is truly one of Gods creations.

It is the only true cove anchored in Pensacola Inlet. We have tried them all, Seal Bay, Long bay, little seal and trap bay. none compare in beauty or rafting. I see that

you want to know of the Environmental impact of what I will tell you, devastating is what it will be. It angers me that people who live in S.E. Alaska want to destroy what is truly beautiful because they don't even take the time to use it or because it's not where they choose to go to see natural beauty of South East therefore it is not important. If you would take the time to spend a few days anchored up in Saltery Bay you would see the wildlife and its beauty. We oppose the logging of any of this area.

114

Sincerely
Harvey Hartman
Harvey Hartman

February 10, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

I am writing in regards to my disgust with the thought that more clear cutting is going on or being planned in forests of Alaska even today. I have seen what the effects can be right here in Michigan and would hope that this is not still happening in other areas of the United States. I have heard that the Forest Service is planning to clear-cut timber in the vicinity of Tenakee Springs in the Tongass National Forest (Finger Mountain timber sale).

Clear cutting should be a way of the past is definitely not necessary to provide the timber you seek. Why can't only a selective area or no clear cutting occur? I know we have lost acres of dense pristine forest in this state that will never be replaced, let alone the habitat it provided for the wildlife. I am not some eco maniac who runs around telling and fighting with people about every little thing the government is doing to destroy our natural wonders. I have the rural midwestern upbringing that tells me something like this isn't right and an alternative can be found if people are willing to look and work hard enough to make it happen.

I have also been informed that roads will be built and old ones reconstructed. While I have not personally been to the area I can see no good coming of "moving" the area into the superhighway era. Roads that exist should be maintained but so should the natural beauty of such an area as Alaska has to offer. That's what make this the last frontier!

If such projects go ahead as the proposal states then the area would suffer great environmental impact if the source I have is correct. Please see that this doesn't happen and keep the area as pure as it presently is. Thank you.

Sincerely,



Kathy A. Klawieter

6070 Greeley Ave, NE
Rockford, MI 49341

Molly Kemp/Nick O'Inisred
Box 571
Tenakee Springs AL 99841
02/25/00

Jim Franzel, District Ranger
USDA Forest Service
204 Signaka Way
Sitka AL 99835

Dear Mr. Franzel,

Please consider these comments regarding the proposed 'Finger Mountain' Timber sale.

There has already been too much industrial-strength clearcutting in Tenakee Inlet, on Chichagof Island, and in the Tongass National Forest. This proposal, while reduced from its original form, is still an anachronistic reminder of the bad old days of "timber first" policies.

New road construction in a currently untouched watershed and more large clearcuts (or near-clearcuts) are simply unacceptable in light of modern recognition of the other values of old growth forests. We urge you to select Alternative A, the "no-action" alternative. If the draft EIS gave an adequate description of the extent of clearcuts already imposed on Tenakee Inlet there would be no room for discussion. Consider what has already happened, starting with the earliest cutting near Salthaven. Even those cuts that are now near 100 years old (for example, the area that surrounds our home) are still unmistakably second growth, with densely packed, small diameter knotty poles and little or no browse for deer. The old A-Frame logging sites west of town are still choked with alder. Corner Bay, Crab Bay, in-between

To
USFS
District Ranger James Franzel
re: Comments on the Finger Mountain timber sale

Dear USFS and District Ranger J Franzel,

I am writing my comments to you on the DEIS for the PROPOSED Finger Mountain timber sale, and your preferred alternative "B". I strongly support the "A" ALTERNATIVE-NO ACTION. Tenakee Inlet has already been the location of an intensively clear-cut area. Please slow down or quit clear-cutting all together in the Inlet. "ENOUGH IS REALLY ENOUGH".

8-2

The residents of Tenakee have been hit especially hard with the clear-cuts already taken here in the Inlet. Our economy is already financially "embarrassing". If we hope to keep our young people here in the community there has to be an income for them. Time after time they want to stay but there isn't any means to support their selves and a family. Currently there are a few young folks trying to make a living here, one has started a fishing and sightseeing charter service and another couple have been crabbing. I don't believe the crabbing will happen again this season because there is too much outside competition for the increasingly fewer crabs available here in the Inlet. And while the charter business is panning out, it will faller as soon as you start your proposed plans for logging here in the Inlet. With the constant helicopter and plane traffic, and the proposed logging camps, and dumps here in the inlet who in their right minds would pay to charter here? Do you think they will want to take pictures of the clear-cuts and drag a hook around in the water all day with out even catching dinner? Because that is what your logging plans have in store for the Inlet and our community, they will definitely have an adverse effect on Tenakee Springs.

3-2

The subsistence hunting and gathering of seafood will be totally nonexistent in Crab Bay after you put in the proposed log dump and camp....I use it all the time for a food source, it is a short skiff ride across the inlet for the residents and visitors of our little community. But once your plan goes into effect that is over for us, no more food source from Crab Bay.

You are hurting us so much, in so many ways, why do we not matter in your plan? Don't we count for anything in your scheme? We are the ones who will be living here, in your mess, after you have gone, and taken with you our fish, deer and crab.

2-1

Seal Bay is another place we have all used for hunting, fishing and recreation. It too will no longer be "usable" to us once your plan "B" gets underway. Please, I am appealing to you to stop the clear-cutting here in this Inlet. It is cost prohibitive. Please don't leave us sitting in the middle of a clear-cut Inlet, again, we can not survive in that type of environment.

I urge you to choose ALTERNATIVE "A" - NO ACTION

Sincerely,
Terry Kennedy
Tenakee Springs, Alaska 99841

Terry Kennedy

*Kemp/Dunstal
Finger mtn EIS*

Columbia Cove and the Indian River valley were all sacrificed to satisfy one ravenous pulp mill. Those clear cut lands will not regain old growth characteristics in the lifetime of anyone that is alive today- or in the lifetimes of their grandchildren.

8-2

Clear cuts and roads from the Eight Fathoms cutting have spread into the Tenakee Inlet watershed, and Freshwater Bay cutting has spread around East Point. The ravaged landscape south of Tenakee Inlet extends right to the border of the Trap Bay UDU area.

It doesn't take much imagination to know what would have happened to Tenakee Inlet by now if people had not cared enough to stand up to the Forest Service. All you need to do is fly over Freshwater Bay or Talise Island, or imagine the devastation in Carver Bay imposed on every productive acre of Tenakee Inlet. There has already been too much clearcutting, and there have already been too many years when the scale was weighted in favor of timber production at the expense of everything else.

Public reaction to this proposal is overwhelmingly negative. Every public meeting in Tenakee has resulted in unanimous support for the "no action" alternative.

You have an opportunity to start the new century by demonstrating a new responsiveness to clearly expressed public opinion. Surprise everyone and select Alternative A! We believe you'll be surprised by the positive reaction.

Sincerely, Molly Kemp and Nick Dunstall

To whom this concerns:

I am writing to you on behalf of the residents of Tenakee Springs, Alaska to state my objection and view on the Forest Service proposal of the "Finger Mountain" timber sale. I support the alternative ("A") proposal, NO ACTION.

Clear-cuts in the vicinity of Tenakee Springs in the Tongass National Forest would adversely affect the beauty and the pristine quality of the environment there forever. The cumulative effect of this and the four other timber sales (Indian River, Eight Fathom Bight, False Island and Saook Bay, all within 20 miles of Tenakee Inlet) will be devastating to tourism and sport and commercial fishing businesses that use Tenakee Inlet. The continued destruction of old growth forests is already having adverse effects on wildlife, the economy and the sense of well-being of the Tenakee Springs residents. All associated activities (clear-cuts, logging, logcamps, LTF's and related marine and helicopter traffic) of this proposed "Timber Sale" would severely affect the currently pristine drainage near the Little Seal Bay.

Your own Forest Service scientist's generally acknowledges it and by many other scientific studies that clear-cutting is harmful to wildlife.

I do not live in Tenakee Springs and have never visited Alaska. After twenty-five years of living in the majestic "Colorado Rockies" (also affected by Forest Service decision's) I have recently moved to the southern coast of the Delaware Peninsula. The environment is as beautiful as the Rockies and I am sure the Tongass National Park in Alaska, but also equally in danger of losing it's wetlands, sand dunes, beaches and a way of life for the inhabitant's, to the handiwork of over zealous developers and public officials with their own agendas.

I understand, support and share this real concern the residents of Tenakee Springs are facing.

Common sense should tell us all that the destruction of these old growth forests in Alaska, Colorado and around the world have devastating consequences and jeopardize the future of Earth. Even now, today, we are witnessing the effects the destruction of the rainforests has caused. The whole world is now experiencing the long range effects of that fiasco! Have we learned nothing? Take the concern's of your own scientists, scientists and environmentalists from

around the globe seriously, and heed the warning that is in front of our faces now visible from our past environmental mistakes.

If our future generations are to enjoy what too many of us take for granted and Earth is to survive, the type of activity this "timber sale" involves must stop.

Tenakee Springs is a community of only ninety-six. Even with the help of others to support them, taking issue with the Forest Service alternative ("B") proposal is a "HUGE" task. I hope this letter and the others I am sure your department has received help the wildlife and inhabitants of the Tenakee Springs area Preserve their way of life.

The words, Forest Service, infer that you serve the forest. I hope somewhere in there is the "Best" interest of the forest and all of its inhabitants (wild, human and plant) in their continued survival.

Sincerely,



Ginny Kuhnert

Erik Lie-Nielsen * * * Juneau, Alaska 99802

P.O. Box 22876

February 27, 2000

Jim Franzel, District Ranger
USDA Forest Service
204 signaka Way
Sitka, Alaska 99835

Re: Finger Mountain EIS

Dear Ranger Franzel:

Thank you for the opportunity to comment on the proposed Finger Mountain Timber Sale. Please add my name to your mailing list for this proposed project.

I most emphatically object to this proposed sale for a number of reasons:

1. The sale seems designed around the needs of large timber processors and ignores the reality and needs of the smaller operator - the very ones who best keep the income in the local communities and provide lasting employment for our local communities. I also suspect that a large part of the proposed harvest will wind up being exported and will provide foreign jobs at the expense of American taxpayers. 5-1
2. This sale, as proposed, will have a heavy negative impact on the other users of the forests, namely the tourism industry which will be severely impacted by the destructive harvests planned for the local viewshed, subsistence users who will ultimately be denied the product of an extensive area, and the fishing and crabbing industries who will be impacted by the degradation of habitat caused by the clear cutting, log dumps and log transfer points; 7-4
3. The new roads planned will have very harmful consequences to an area which has until now, been largely spared the well recognized negative impacts of forest roading. Further, the Forest Service currently has many, many miles of roads which you can not afford to maintain and to add yet more borders on a criminal disregard for the mission of the agency. To quote Forest Service Engineer Brian Heinrichsen in the Capitol City Weekly - July 28, 1999 issue, for example: 11-7

"We don't have the money to maintain the road system we have now. We have 123 miles of road in the Hoonah District, and about 70 miles of that is already overgrown with alders."

While this comment applies to the Hoonah Ranger District, any reasonable person will have to question the sanity of building more roads anywhere on our National Forests, from a strictly economic standpoint, if nothing else;

Page two of two - Finger Mountain EIS

4. As a taxpayer, I heartily object to such mis-use of public funds for the temporary benefit of a select few who contribute little or no long-term benefit to our local communities. As a matter of fact, I believe that proposed sale will have a long-term negative economic impact on our area as well as to the American public at large; 7-4

5. The proposed sale will severely detract from the enjoyment of the local recreational users of this area, including for my family and myself. Many Juncautes recreate in and around the Tenakee Springs area as it is well known for its beauty and setting. It seems incredible to me that the Forest Service would even consider designing a sale for this area, for that reason alone; 3-2

6. The designers of the proposed sale have chosen to ignore the public input from local citizens in that their CCC alternative is not being considered. Cumulative impacts of other past and future local sales have also been apparently ignored. This does not seem to be good management practices or in the interests of the forest, local citizens or the public at large. 5-1

To summarize, I believe that this proposed sale is not in the best interests of the American public, local citizens or myself. It will cost taxpayers money, severely degrade the local environment and contribute only temporary economic benefit to those nestled and sucking at the natural resource teat for far too long already, at the expense of the rest of us. I believe that your mission is clear and this sale should at very least be re-designed to benefit small local operators, avoid clear-cutting and road building and LTF's, and provide good environmental protections. Perhaps it should be thrown out altogether.

Sincerely,



Erik Lie-Nielsen
Citizen

February 27, 2000

Jim Franzel, District Ranger
USDA Forest Service
204 Signaka Way
Sitka, Alaska 99835

Re: Finger Mountain Timber Sale(s) Draft Environment Impact Statement

Dear Mr. Franzel:

The Finger Mount draft EIS fails to include either the beneficial or detrimental impacts of logging on the more than 600 plants of the forest under-story in Tenakee Inlet. That deliberate omission disqualifies the drafters from participating in any meaningful debate of the economic impacts of the sale upon the City of Tenakee Springs or the people of Southeast Alaska. Until the Forest Service rediscovers its mission in this bioregion and can measure all economic, social and cultural values including those associated with subsistence practices, Alternative "A" should be adopted.

Sincerely,

Roger V. Lewis
P.O. Box 532
Tenakee Springs, Alaska 99841

2-7-2000

Dear Mr. Franzel,
I'm writing in support of the
Forest Service Proposed Roadless
Area Policy in the Tongass Nat'l
Forest.

The Finger Mountain Timber Sale
EIS Impact on Tenakee Springs
Clear Cutting would have an
adverse destruction of old
growth forests - Leave the
beauty of this Area alone -
I live in Washington State
and see the effects of clear

cutting. The beauty of your Great
State should be preserved for
future generations - Alaska -
The Great Frontier - Last frontier
not for long if we continue
to mutilate the forests.

Thank you for taking the time
to review this note. I know you
don't have an easy path.

Sincerely,

Pamela A. Lucas

Dear Ranger Franzel

Several years ago my son Steve and I spent 5 days Halibut and King Salmon fishing at Tenakee Springs. We enjoyed our experience very much, especially all of the wild life we saw. Whales, porpoises, deer and eagles were all in abundance. We did not realize what we experienced until we talked with other Alaska visitors on our flight home. One couple had spent two weeks in the Anchorage area on a whale watching cruise and saw no whales.

It has been brought to my attention that the Forest Service proposes to cut 21 million board feet of timber from 936 acres in the Tenakee Springs vicinity. It seems to me that such an undertaking would have a devastating effect on the fishing, wildlife, whales, and etc. in the area. Please reconsider the DEIS proposed timber sale in this area and let visitors like myself and residents of Tenakee Springs continue to enjoy the pristine wilderness. We are currently planning another visit to Alaska, one of this countries last frontier. Please help to keep it that way.

Thanks Steve and Ron Limbach

Dear Jim Franzel:

I am writing you as a deeply concerned citizen of Southeast Alaska. I am deeply concerned with the US Forest Services' decision to grant timber sales in Tenakee Inlet. Especially so since your DEIS failed to examine the wise alternative called the CCC ALTERNATIVE as prepared by locals residents of the areas most adversely effected. This kind of action on the part of the USFS does no one any good. Especially Tenakee residents and the ultimately the USFS. It would appear that the USFS multi-use philosophy is really only vested in the best interest of certain timber industry giants and has nothing to do with value-added concepts or independent businesses. Please favor me with a kind respond to my concerns. Thank you in advance for your valuable time.

Sincerely,

Alan R. Munro, a committed 29 year resident of Southeast Alaska.

Jim Franzel
Attn: Finger Mountain EIS
USDA Forest Service
204 Signakna Way
Sitka, Alaska 99835

Mr. Franzel,

Please consider the following comments and include them in the record concerning the Finger Mountain Timber Sale:

1. Consider choosing the CCC alternative to timber harvest in their immediate vicinity. 5-1
2. Leave Little Seal Bay as it is. 11-4
3. Utilize existing roads for any further timber harvest in Tenakee Inlet. 3-1
4. Consider selective cutting vs. clearcutting. 1-1
5. Conduct pre-commercial thinning of existing second growth stands and commercially harvest second growth stands prior to any more new clearcuts
6. Consider the long term impacts from the logging which has already occurred in Tenakee Inlet. 11-1
7. Fully protect the deer populations in Tenakee Inlet for subsistence and sport use. 2-1

9. Switch management from large clearcutting to small selective logging to protect the existing pristine habitat scheduled for logging.
10. Consider placing more of a management emphasis on tourism/recreation in Tenakee Inlet.

Thank you for allowing my comments to be considered in your process.

Sincerely, Craig Mapes
PO Box 210901, Auke Bay, Alaska 99821

Craig Mapes

February 28, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signakna Way
Sitka, Alaska 99835
Fax: 907-747-4331

Dear Jim:

Thanks for the opportunity to comment on the Draft EIS for the Finger Mountain Timber Sale(s). My comments will be mostly limited to wildlife issues.

I. Fragmentation and Connectivity

One of the most serious consequences of past logging operations in Southeast Alaska has been habitat fragmentation and the resulting threats to wildlife viability. As indicated in the Southeast Chichagof Landscape Analysis, the fragmentation of old growth habitat since 1956 has been dramatic. In 1956, almost all (89% or 106,896 acres) of the interior old growth habitat on Southeast Chichagof (120,066 acres) was *contiguous*, in 50,000 acre blocks or greater.¹ By 1997, there were *no* blocks of 50,000 acres or more; the largest remaining patch was less than 20,000 acres. In other words, there was no contiguous interior old growth habitat greater than 20,000 acres. This contrast between 1956 and 1997 is presented in two visually stunning maps in the Landscape Analysis, Figures 4-16 and 4-17.² As noted in the Landscape Analysis, the "consequences of fragmentation include a loss of interior old-growth habitat" and "[f]or most old-growth associated species, reductions in old growth habitat result in negative impacts."³ Because most of the wildlife species considered in this Draft EIS are associated with old growth habitats,⁴ the threats to these species must be very seriously considered.

In addition to this dramatic fragmentation of old growth habitat on Southeast Chichagof, there has been a corresponding loss in connectivity between old growth blocks. As noted in the Draft EIS, the "connectivity, or corridors, between habitat blocks in a landscape may be at least as significant to maintaining diversity as the size of the blocks....In the project area, connectivity along riparian areas, beach fringe, and between habitats at different elevations has been reduced by clearcutting within the watersheds."⁵ One measure of fragmentation and connectivity is isolation, which is measured in the Landscape Analysis as the distance between 200-acre patches of old growth. One study showed that the mean distance between patches has increased 150%

¹ Southeast Chichagof Landscape Analysis. Michael Shephard, et al. U.S. Department of Agriculture, Forest Service, Tongass National Forest, Chatham Area, Sitka Ranger District. Sitka, Alaska. November, 1999. Chapter 4, page 30.

² Ibid. Chapter 4, following page 30.

³ Ibid. Chapter 4, page 30.

⁴ Ibid. Chapter 4, page 30.

⁵ Finger Mountain Timber Sale(s) Draft Environmental Impact Statement. USDA, Forest Service, Tongass National Forest, R10-MB-401. December, 1999. Chapter 3, page 7.

however, for species other than deer, it is not possible to quantify the future effects at this time. Any future timber harvest would have to evaluate these effects.¹¹ This is an irresponsible statement; the Forest Plan requires (among other things) that viable populations be maintained. If you cannot demonstrate and quantify the cumulative effects of fragmentation and loss of connectivity on the viability of species (especially endemic species), the project cannot proceed.

11-1

IV. Some Specific Wildlife Species

Keen's Myotis is listed in the Draft EIS as a "Species of Concern."¹² However, in 1997 the Forest Service referred to it as a "Sensitive Species."¹³ When was this change in its status made and upon what specific basis (other than the authority of the Regional Forester to make such a designation) was the change made? The Draft EIS states that "Keen's Myotis *apparently* [my italics] roosts in snags, hollow trees, rock crevices, and caves." and then, based on this supposition, goes on to propose that protection of the bat will be done by retaining "at least 3 snags per acre (*if available*) [my italics]."¹⁴ What if 3 snags *are not available*? The Draft EIS goes on to say that "[t]he amount of habitat removed could affect individuals of the species, but is not expected to negatively affect population viability."¹⁵ In the absence of documentation in the Draft EIS, please demonstrate how this speculative plan will protect the viability of Keen's Myotis. Also, please describe all actions taken by the Forest Service to determine the status of this subspecies on Chichagof Island. Finally, please explain how the distribution and population status of the animal will be effected by each of the action alternatives.

1-7

The brown bear is listed in the Draft EIS as a Management Indicator Species (MIS). However, the Draft EIS, in discussing the effects of the action alternatives on the brown bear, does not mention that the bears on Chichagof, Admiralty and Baranof Islands may be "unique from all other brown bears in the world and more closely related genetically to polar bears than to other brown bears."¹⁶ Please demonstrate to me how the viability of these bears is protected, not as a member of the general population of all brown bears in Southeast Alaska, but as a distinct species found only on those three islands, and taking into account the potential effects of future logging in other areas on the same three islands. The only discussion in the Draft EIS about the effects of continued sport hunting of these animals is this: "The increased access [by roads] could result in more bears killed by hunters and poachers."¹⁷ Please demonstrate to me--considering the cumulative and combined threats from road building, habitat fragmentation and hunting--how the viability of these bears is protected.

1-6

The Draft EIS does not mention the endemic subspecies of the tundra vole, *Micronus oeconomus sikkimensis*, sometimes called the Alexander Archipelago tundra vole, or the ermine, *Musela*

¹¹ *Ibid*, page 21.

¹² Finger Mountain Timber Sale(s), Chapter 3, page 30.

¹³ Tongass Land Management Plan Revision, Final Environmental Impact Statement. USDA, Forest Service, R10-MB-338c, Appendix, Volume 1. January, 1997. Page K-130.

¹⁴ Finger Mountain Timber Sale(s), Chapter 3, page 30.

¹⁵ *Ibid*, Chapter 3, page 30.

¹⁶ Brown Bears of Unit 4. Past, Present and Future: A Status Report and Issues Paper. Alaska Department of Fish and Game, Division of Wildlife Conservation. July, 1998. Page 6.

¹⁷ Finger Mountain Timber Sale(s), Chapter 3, page 22.

since 1956, while the mean patch size has decreased by 50%.⁶ These are alarming figures; as fragmentation increases and as connectivity decreases, wildlife viability is at a greater and greater risk.

It is clear that the threats to wildlife from fragmentation and from loss of connectivity have not adequately been considered in the Draft EIS, and that the potential consequences and proposed protections are purely speculative. Additional comments justifying this position will be presented in "Some Specific Wildlife Species."

II. Endemism

It is also clear that the Draft EIS fails to adequately consider endemic species. There is only one small paragraph in the EIS dealing with endemic mammals, in which it is stated that "[n]o surveys [for endemic mammals] were conducted specifically for this project" by the Forest Service, but that surveys by others "have [not] identified any rare or endemic terrestrial mammal populations on Chichagof Island."⁷ This appears to be a failure of research because, for example, one of the three known specimens of Keen's Myotis collected in Southeast Alaska was collected on Chichagof Island.⁸ Further:

"The biology of this species is poorly known. It is represented in museum collections by only 59 specimens....Whether this is an indication that this species is actually rare, and thus a species of concern for conservation, is unknown. In Canada, the species is listed by COSEWIC as 'vulnerable'....so little information is currently available on this species that little can be said about its habitat affinities."⁹

What is known, however, is this: "Keen's myotis has one of the smallest distributional ranges of any North American bat..."¹⁰

The Forest Plan, under which this Draft EIS was developed, requires an evaluation of the existence of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges. The lack of such an evaluation for the Draft EIS represents a major shortcoming and must be corrected. Can you please demonstrate why the required evaluation was not conducted. More discussion related to endemism will follow in "Some Specific Wildlife Species."

1-7

III. Cumulative Effects

The Draft EIS has only two short paragraphs discussing the cumulative effects on wildlife. It is stated that "[o]ld growth-dependent species would experience reductions in habitat capability;

⁶ Southeast Chichagof Landscape Analysis, Chapter 4, page 12.

⁷ Finger Mountain Timber Sale(s), Chapter 3, page 14.

⁸ The Mammal Fauna of Southeast Alaska. S.O. MacDonald and Joseph A. Cook. University of Alaska Museum. August, 1999. Page 21.

⁹ *Ibid*, page 21.

¹⁰ Rare Vertebrate Species of the Chichagof and Tongass National Forests, Alaska. A Report by Edward W. West, Alaska Natural Heritage Program. The Nature Conservancy. Anchorage, Alaska. June 1993, page 20.

erminea infinis. These vole¹⁸ and ermine¹⁹ subspecies have been found only on Baranof and Chichagof islands. Also not mentioned in the Draft EIS is the endemic subspecies of Keen's mouse, *Peromyscus keeni silkenstis*. Please describe all actions taken by the Forest Service to determine the status of these subspecies. Please explain how the distribution and population status of these three subspecies will be effected by each of the action alternatives.

1-7

When discussing the Marten and road density in the project area, the Draft EIS presents misleading figures. The EIS states that "[c]urrently in the project area, there are 17 miles of roads, at a density of 0.1 miles per square mile," and presents this figure of road density in Table "Wildlife-4."²⁰ The limited discussion of "mitigation" also uses this same figure for road density.²¹ In fact, the figure of 0.1 miles per square mile is an *average* density, which fails to consider that the density in several VCUs (230, 233, and 234) is much higher, and that most of the proposed logging will take place in these same VCU's (all of the logging in action alternatives B and D will take place in VCU 230, 233, and 234, while alternative F has logging only in VCU 233 and 234). The EIS states that "after project completion" the road densities will fall; however, it appears that the new figures are again averages for the entire project area, rather than individual VCU's. It is my opinion that the EIS fails to adequately consider the effects of road building on fragmentation, connectivity, and endemic species. Please demonstrate and quantify the effects of road building, fragmentation, and loss of connectivity on wildlife, especially endemic species, based on the actual road densities, in the VCU's affected

1-1
1-7

V. Conclusion

After considering:

- 1) the amount of fragmentation and loss of connectivity that has occurred on Southeast Chichagof;
- 2) the threats to wildlife viability resulting from the fragmentation and loss of connectivity;
- 3) the failure of the EIS to consider endemic species;
- 4) the speculative protections provided for wildlife in all of the action alternatives;
- 5) the failure of the EIS to consider cumulative effects;

1-7

11-1

I urge that the no-action alternative (Alternative A) be selected by the Forest Service. All of the other action alternatives are purely speculative with respect to the effects of the project on endemic species. In addition, it would be unwise to choose any alternative that includes constructing roads into areas that are currently roadless in view of the national roadless policy that is currently under consideration by the administration.

As noted in the Draft EIS, "Alternative A proposes no new timber harvest or road construction from the Finger Mountain project area at this time." At some time in the *future*, when the need

¹⁸ North American Rodents: Status Survey and Conservation Action Plan. Compiled and edited by David J. Hafner, et al. IUCN. 1998. Page 98.

¹⁹ The Mammal Fauna of Southeast Alaska, page 68.

²⁰ Finger Mountain Timber Sale(s), Chapter 3, page 21.

²¹ Ibid, Chapter 3, page 25.

for logging Southeast Chichagof is demonstrated and when more is known about the consequences of past and future logging, perhaps a justifiable logging plan can be devised.

Thanks again. Please respond to my requests as contained in this letter, and please keep me informed of any and all decisions with respect to this project.

Sincerely,

Don Muller

Don Muller
Box 1042
Sitka, Alaska 99835
747-8808 ph
email: donmuller@msn.com

James Franzel, District Ranger
attn: finger mountain EIS
USFS fax 907-747-4331

I and my family support alternate 'A' NO ACTION. There has been enough logging in the inlet and none of it has produced any benefits for Alaskans. Your proposed alternate 'B' will clear cut 936 acres but spread over and affecting, by your maps, at least 36000 acres! Furthermore the creation of 34 miles of road with a planned permanent leave of 14 miles will impact the entire unit of 72780 acres.

This type of development will definitely degrade the available resources and impact the life style of many Alaskans. Sitka, Juneau, and Tenakee residents as well as the rapidly growing fishing, hunting, and tourism users will find the fish, game and scenic values diminish. There is no information, studies or research which indicates that past logging has resulted in an increase of these values.

In particular your summary states that there would be no significant 'restriction on subsistence resource use'. This just intends to gloss over the fact that there will be indeed a reduction of available subsistence resources. The existing roads in the inlet have resulted in a large increase in the numbers of visitors to those areas which already have shown a decline in deer harvest as well as destroying the wilderness aspect.

The EIS also purports to establish that 'market demand is not considered a significant issue! Why then are you proceeding? We citizens of the area must also not be blinded by a single EIS issue but must also take this into context with adjacent planned logging. You are also planning for logging Indian River, False Island, 8 Fathom, etc. Save something for the future!

Tenakee Inlet is unique and should not be allowed to be further degraded to benefit outside interests.

Sincerely,

D. L. Miller
Box 632
TENAKEE SPRINGS, AK
99841

February 18, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

I endorse alternative A as the preferred alternative for Finger Mountain in Tenakee Inlet. I find it hard to believe that you plan to clearcut the drainages of Little Seal Bay and Crab Bay and areas out in the main channel across from Tenakee. These areas are rich in water fowl, deer, salmon and bears. The affects on wildlife would be disastrous and long lasting. The associated adverse affects on the Tenakee resident's economy and subsistence lifestyle is incalculable.

I was raised in Northern California and have seen that the responsible logging practice of selective cutting of trees does work. It allows for the continued existence of habitat for wildlife and people still can enjoy an intact forest. The forest service must adopt this more acceptable form of harvest if our forests are to survive. 8-2

It is difficult for me to understand the need to devastate a pristine old growth forest for the few jobs it would create and at the expense of the needs of the residents of Tenakee Springs. They rely on the intact forest for their subsistence, recreation and tourist based economy. Commercial fishing in the area would also be affected.

If the other proposed logging operations in Indian River and Eight Fathom Bight occur at the same time, the impact on Tenakee would be very harmful. The noise, pollution, increased activity and environmental damage are all negative factors for residents and tourists. 11-1

Thank you for the opportunity to comment.

Sincerely,

Dan McBeen

Daniel McBeen

February 27, 2000

Lisa Winn, Team Leader
Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, Alaska 99835

Dear Ms. Winn:

I am writing to urge the Forest Service to select Alternative A for no action on the proposed Finger Mountain timber sale.

My reasons are several:

- I object to the unwillingness of the Forest Service to work with the residents of Tenakee Springs to develop a timber sale plan that they can support. The standard process of designing alternatives without consultation and then presenting them to the public for comment is fundamentally flawed. If the Forest Service is serious about collaborative stewardship, it is time to make that effort in earnest. 5-1
- I object to a large sale in Tenakee Inlet because so much timber has already been taken there; 8-2
- I object to a sale that is likely to damage the tourism economy of Tenakee Springs, and bring no significant economic benefit to other communities of the north Tongass; 7-4
- I object to the size of the proposed sale because it shuts out small and medium size operators; 8-2
- I object to the construction of new roads because of the damage done in building them and the inadequacy of maintenance that leads to additional environmental damage. 7-4
- I object to large scale clearcutting in general because of the environmental damage it does, and its negative effect on wildlife habitat; 9-1
- I object to such a large sale being proposed so close to Sitka because it will have a negative impact on subsistence hunting. 9-1
- I object to the name, "Finger Mountain," given to this proposed timber sale because it has no relevance to the area and is therefore misleading. 2-1

Sincerely,

Dorik Mechau
Box 2420
Sitka, Alaska 99835

February 27, 2000

To: Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

From: James Mackovjak
P.O. Box 63
Gustavus, AK 99826

Re: Finger Mountain Timber Sale

Dear Mr. Franzel:


I am writing to express my opposition to the Forest Service's proposed Finger Mountain Timber Sale at Tenakee Inlet. As proposed, that sale is both unnecessary and destructive. 8-2

For too long the forests of Tenakee Inlet have been clearcut—the rationale being to supply timber to the two long-term contract holders, KPC and APC. Those contracts no longer exist, and it is time for the Forest Service to give primary consideration, in light of the long-term impacts from this sale, past sales and other proposed timber sales (such as the Indian River Sale), to what is best for communities such as Tenakee Springs. The Chichagof Conservation Council (CCC) has outlined a design for the Finger Mountain Timber Sale which will provide some real benefit to Tenakee Springs, and the Forest Service should choose the CCC alternative. 5-1

I fully support including the Tongass in President Clinton's initiative to prevent roadbuilding in roadless areas of our national forests. Therefore, I am opposed to building roads (or clearcutting) in roadless areas such as Little Seal Bay. 11-4

Recently I have been made aware of the damage caused to the seabed by storing logs in the water. Any sale at Tenakee Inlet should require that all logs from the sale be placed on barges. 4-1

Business as usual for the Forest Service in southeast Alaska for nearly half a century has been to lay out and sell huge timber sales in which precious old-growth timber was clearcut with no regard to the future of our economy and communities, the environmental health of the region, or the effect on taxpayers. Myself and I believe the vast majority of the public are concerned that the Forest Service has for too long catered to the interests of those who view the Tongass as nothing more than a source of subsidized timber. The forests of southeast Alaska and the Forest Service owe nothing to the timber industry, which has long since helped itself to much more than its share of timber. If the Forest Service is not willing to moderate its pro-timber bias, than I believe the public will in the not too distant future move to completely eliminate logging on the national forest system.

Sincerely,

James Mackovjak

P.O. Box 31
Tenakee Springs, AK 99841
February 17, 2000

907-736-2245

JOAN M. MCBEEEN

PO Box 23

Tenakee Springs, AK 99841

February 28, 2000

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel:

I think that the designation of this sale as the "Finger Mountain" timber sale is fallacious and misleading. This sale is really the Crab Bay, Inbetween and Little Seal Bay timber sale. I wonder if the Forest Service wants to mislead the public by giving this sale a name whose mountain is not even close to the threatened areas nor is it in any peril of being logged.

I am opposed to your preferred alternative B and would request that you go back to the drawing board and first correct your project name and then correct your alternative. Our mayor and two of our community members attended a Collaborative Stewardship symposium in Ketchikan sponsored by the Forest Service. As a result of that symposium, the Chichagof Conservation Council Alternative was drafted, submitted and summarily dismissed by the Forest Service Planning Team which stated that "the issues were already included in other alternatives." I would suggest that the Forest Service give serious consideration to the CCC Alternative which allows for much smaller scale logging and would give local residents an opportunity to participate in the bidding process. 5-1

I am opposed to any new road building and feel it would be prudent for the Forest Service to await the result of the proposed "roadless policy" being considered for the National Forests. The idea that adding roads would in any way enhance recreation opportunities is not consistent with my idea of recreation. There are plenty of roaded areas in Tenakee Inlet, Southeast Alaska and the lower 48 where motorized recreation can happen. 3-1

Given the range of alternatives presented in the DEIS, I can only support Alternative A. Since this is the time for public comment, I would appreciate a more substantive response to my concerns than "Comment Noted".

Sincerely,

Joan M. McBeene

Joan M. McBeene

Mr. James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

Dear Sir,

Thank you for the opportunity to comment on the proposed Finger Mountain timber sale and related areas of Tenakee Inlet at Crab Bay in between Greek and Seal Bay. I wish to make some comments and ask some questions that perhaps you can answer.

I have lived in Southeastern Alaska for fifty-nine years, with the last ten in Tenakee Inlet, directly across the inlet from Crab Bay.

Over the years I have observed clear cuts from Annette Island to Port Frederick, islands in between and along the main land coast. Clear cutting started in 1950 when Ketchikan Pulp started their operation. At the time, the US Forest Service put the word out that if given the timber license, there would be a continuous yield of timber by replanting and that within 30 years there would be second growth for harvest. With the second growth there would be no need for additional timber licenses or grants to KPC. This did not happen and the harvest of 30 year old second growth did not happen. There was none. One can fly on a clear day from Sitka to Ketchikan and observe Prince of Wales Island. It looks like a wasteland from the clear cut. Where are all the 49 year old second growth trees that were to have been planted by KPC? To me it appears that once the cream was skimmed from Prince of Wales so to speak, KPC unloaded the mill in Ketchikan, hopefully, to move onto greener pastures, if there are any. 8-2

Looking across Tenakee Inlet from my front window, I can see several clear cuts at Crab Bay and inland along the shore to Kadashan Bay. These sites were cut in 1955, 45 years ago. Today, these sites look as barren as if it was logged yesterday. If clear cutting is the answer, where are the 45 year old second growth trees on these sites? I see none.

If the previously built log dump at the left entrance to Crab Bay is used, I shudder to think what will happen to the herring spawning grounds in the immediate shoreline from Crab Bay to the Kadashan River. According to Andy McGregor, herring biologist with the State, this shore line is one of the major spawning areas in Tenakee Inlet. As 6-1

you probably know, the herring have been on the decline for a number of years in this inlet. By dumping logs at this site, why add to the decline? Once gone, they seldom come back. Herring is the food of the sea. One has only to go back to the 1940's and 50's when the herring used to fill the Tongass Narrows in Ketchikan. Development, poor management and a multitude of things caused the disappearance. Before the KPC was started, Ward Cove was filled with herring and salmon. Bark from the log rafts and other wastes one the bottom have resulted in no herring and very few fish at all today. I point this out as I feel the logging in the afore mentioned sites are going to have a drastic negative impact. May I suggest that your agency take a long hard look at the long term impact on Tenakee Inlet timber sales, to include the following:

1. Fully protect important subsistence use of deer and fish in this area. 2-1
2. Prohibit the dumping of logs in tide water, to include no logs going dry on the beaches. 4-1
3. Why do my tax dollars have to subsidize log road building? I derive no benefit from this except to look at a 45 year old clear cut with little or no second growth. I feel that there should be some consideration given to those of us that are forced to live with the after effects of clear cutting. 7-4
4. Protect all herring spawning areas that might be or could be affected by log dumps or related waste materials. 6-1
5. Consider the long-term visual impact from such logging, profound adverse effects on sport and subsistence hunting, and sport and subsistence fishing. Local residents rely heavily upon these. 3-2
2-1

With no or few buyers of offered timber sales over the last few years, is there really a need to put up the Finger Mountain and related timber sales?

I am not totally opposed to logging per se, as there is a definite need. The best way, from my observation is a total balance which has been lacking. I believe there is a better way but until found, I guess I am in favor of the alternative "A" found in the Forest Service Plan- no action.

Thanking you for your time in reading this letter, I remain

Yours truly,

Lawrence Marx
Lawrence Marx

Dear Friend,

February 3, 2000

We are writing to you concerning an issue that is extremely important to the people of Tenakee Springs, Alaska. We are the small community (pop. 96) in Southeast Alaska who resisted the invasion by a large tour ship a couple of years ago. You and 79 other people from across the U.S. and, even Europe, wrote to us after reading about our action in the newspapers. We deeply appreciate your response and encouragement. As a result of our resistance, that ship and others will no longer call at Tenakee Springs.

Now we would ask you for an additional bit of your time to help us with another urgent matter. The U.S. Forest Service is planning a large clear-cut timber sale in the immediate vicinity of Tenakee Springs in the Tongass National Forest. These clear-cuts would affect the beauty and pristine quality of our environment forever and would be subsidized by your tax dollars. The continued destruction of our old-growth forests is having devastating effects on our wildlife, our economy and our sense of well-being.

The Forest Service has released the Draft Environmental Impact Statement (DEIS) for the proposed "Finger Mountain" timber sale. The name of this sale is misleading since all of the proposed logging would occur in Tenakee Inlet at Crab Bay, In-between Creek and the drainage immediately West of In-between Creek in the vicinity of Little Seal Bay.

The comment period on the DEIS for the proposed timber sale is now open and the deadline for public comment is February 28, 2000. It is very important to make any comments you may have before the deadline.

The Forest Service's preferred alternative ("B") proposes to cut 21 million board feet of timber from 936 acres, to build 21 miles of new road and to reconstruct 13 miles of existing road. The proposal includes log transfer facilities (LTFs) at Crab Bay and In-between Creek, a logging camp at Crab Bay and a floating logging camp in Seal Bay.

Alternative "B" includes huge clear-cuts on the face of the mountain directly across from Tenakee and would severely impact the currently pristine drainage in the vicinity of Little Seal Bay.

WHAT YOU CAN DO:

Write to the Forest Service at:

James Franzel, District Ranger
Attn.: Finger Mountain EIS
204 Signakka Way
Sitka, AK 99835
Fax 907-747-4331

SOME POINTS TO COMMENT ON ARE:

Cumulatively, the logging, logging camps, LTFs and all of the associated marine and helicopter traffic, would have profound adverse effects on sport and subsistence hunting and fishing activities on all of the south side of Tenakee Inlet from Corner Bay to Long Bay. This area is heavily relied upon by Tenakee residents and visitors from other communities.

2-1

FEB 28 2000

Mr. James Franzel, District Ranger
or Lisa Winn, Team Leader
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Gentleman or Madam:

I am enclosing a response to the Finger Mountain Timber Sale. I have also enclosed a manuscript which addresses the issue of low flows and baseflows, *Effect of forest cutting on critical baseflow habitat*, a subject which does receive proper recognition in the regulation of forest practice for southeast Alaska fishing producing forests by the Forest Service, in my opinion.

I vowed last time I would write no more responses to EIS's. Well here is another one. You can thank Bob Ellis for "sparking" me into this.

Sincerely,

Richard T. Myren
Richard T. Myren
3320 Fritz Cove Road
Juneau, AK 99801
2/27/00
Enclosure

The cumulative effects of this and 4 other timber sales (Indian River, Eight Earthem Right, False Island and Saook Bay, all within 20 miles of Tenakee Inlet) would have a devastating impact on tourism and sport and commercial fishing businesses that utilize Tenakee Inlet.

It is generally acknowledged by the Forest Service's own scientists and by many other scientific studies that clear-cutting is harmful to wildlife.

Over the years, Tenakee Inlet has been heavily impacted by timber sales and logging operations over its entire length. Because of this and the direct adverse effects of this sale, including the noise, visual impacts and habitat destruction, virtually all of the residents of Tenakee are in favor of alternative "A" in the Forest Service plan, NO ACTION.

One more thing you can do is to write your congressman and senators and encourage them to support the inclusion of the Tongass National Forest in the Forest Service's proposed Roadless Area Policy.

We hesitate to impose upon you, but we are so small and the Forest Service and timber industry are so big, and we need all the help we can get. Thank you in advance for any help you can give us.

Sincerely,

Joan McBeem
Joan McBeem

Marilyn Taylor
Marilyn Taylor

*Forest Service, Sitka Ranger
District, Alaska
Dear Sir, I saw Alaska back
in 1930-40's. I had mail by
dog team then, no roads.
Dog team many politicians &
but going to skin many politicians &
biting my tail on our 50 states. What can
& Marilyn state is the truth, every word.
Let back to nature's way of life. There
are forests, rivers, streams, & sheep, the people
live there. I was back there & teach the people.
What I was back there - you & Marilyn
forget some facts - I was William
(now 93) aged 3/4 of 24. (Barnard, Oregon)*

export of drainage water and dissolved substances described in Bormann and Likens (their Figure 6-8, page 181) or Oliver (1981)³ may be identified in figure 1 for forest developmental phases: (a) "steady-state" of Old-Growth forest and, (b) forest disequilibrium or succession between 49 and 96 years of age following logging.

The forest development classification of both RA and SE phases shows forest growth is a surrogate for the resources available (A), i.e., of light, nutrients, and water, for growth of biomass of other species. The retrospective analysis of Kirchhoff and Thomson may begin with observing the solid line of figure 1 for the amount of basal area logged (x-axis) and a triangular data point and the number of years of regrowth biomass for the trees in each sample plot to move to its position above the solid line. It can be seen in figure 1 the uptake or availability of new resources (A) by Old Growth forest (a) and no logging is at a steady state with losses due to respiration equal growth biomass and with $A = 0$ (the two boxes in Figure 1 on vertical axis and its projection across different levels of cutting by the wavy line). For (b) of figure 1 and succession or disequilibrium for a sample of plots with ages of initial logging between 49 and 95 years of age, $A > 0$ and the light, water and nutrient resources in forests with approximately 42% or less of the percent basal area logged have added least as much biomass or more compared to the Old Growth forest. For $A < 0$ in (b) and greater than 42% of the basal area logged forest growth has not produced sufficient biomass in the 49 to 96 year sample period to reach or rise above level of biomass of the Old Growth steady-state forest (Figure 1).

The significance of these data is the demonstration of the disequilibrium occurring upon logging with light basal area cutting releasing nutrients, water and redirecting the energy in light which produces biomass addition over the Old Growth forest it replaced which on the left side of figure 1 and adds but more slowly on the right side of figure 1. Such growth addition in the R or S phases of succession is inefficient and leakage of nutrients and water occur in the stream flow resulting in short term biomass increase of fish and aquatic resources and concentrated increases timber biomass in a few trees compared to the right side of figure 1 in which such early short term releases in the R or S phases compared to the spreading such increased biomass over many trees. Because of greater competition of light, water and energy resources of trees on the right size of the figure many more years are required before timber reaches the level of the biomass of Old Growth and the totality of the amount of with drawl of such resources A is at the expense of other resources such as fish and the aquatic environment.

The data of figure 1 is the evidence of long-term demand on (A) of light, water and nutrient resources shown on the right side of the figure, and observed especially for sample plots with ages over 75 years and achieving less than 60% regain of basal area. These data indicate an intense competition for resources and confirms, for example, the need for thinning in second growth forests. Such reduced growth in the plots as levels of cutting approach clearcuts of the right side of figure 1 is in marked contrast to the left side of the figure and obvious high availability A of resources for small basal area logged and the large regain of basal area. The

2

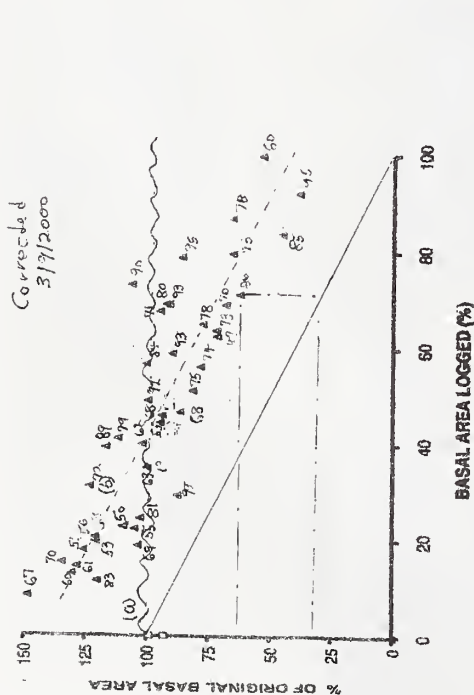
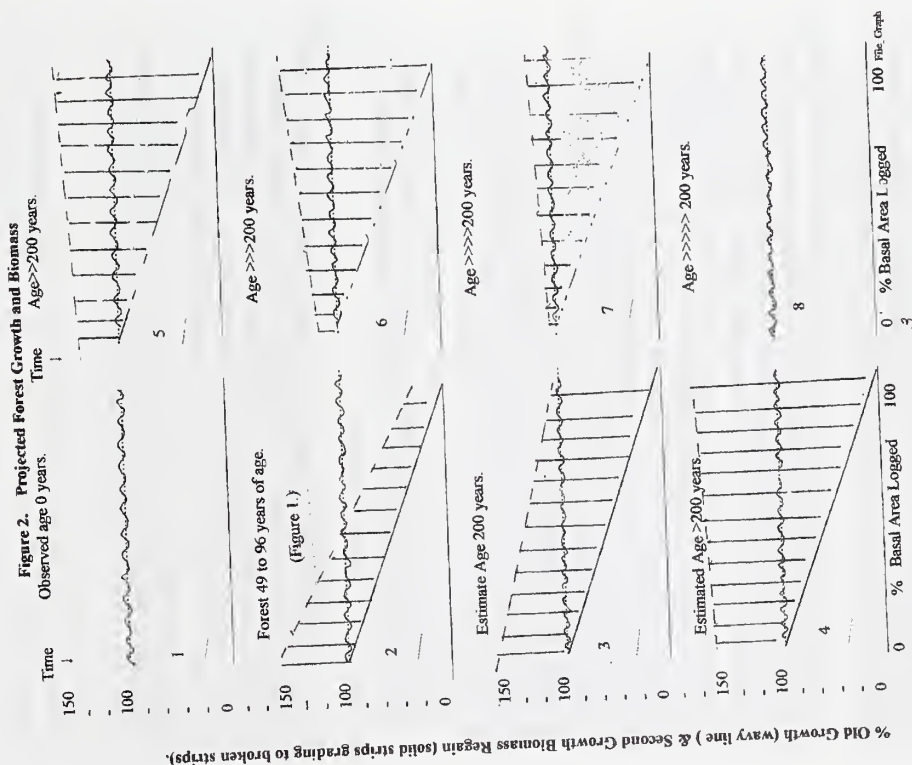


Figure 1 Proportion of original basal area regained as a function of logging intensity (triangles) and no cutting (squares) sampled in 1995-1996. (From Kirchhoff and Thomson, 1998, table 1. Numbers on triangles are the ages (yrs.) of samples). Developmental phases: (a) before logging and Old Growth forests, or baseline and pristine watersheds (small squares on left axis) and reference to steady-state (horizontal wavy line) (b) effect of completion of Reorganization (R) and partial completion of Aggradation phase (A) of Bormann and Likens or completion Stand Initiation (S) and partial completion of Stem Exclusion phase (E) of Oliver following logging (triangles). The dashed line is fitted by eyes. Solid line is fitted by eyes. % of initial cut time of logging. For example, the vertical and horizontal lines identify a sample plot of 71% basal area logged and 29% unlogged basal area with growth of 35% and a return over 86 years to 64% of original basal area.

1A further confirmation of short and long term effects of logging and the effect of the disturbance regime on fish resources.

I had the pleasure of attending Matt Kirchhoff's presentation in the spring of 1999 at the Audubon Society meeting and listening to the accomplishments in his work, *Effects of Selective Logging on Deer Habitat in Southeast Alaska Retrospective Study*.¹ Though his concern was over deer habitat my mind drifted elsewhere and about the hydrological cycle. Suddenly I was aware that here is what Bormann and Likens² had reported years ago, but expressed by Kirchhoff in another form through the retrospective analysis using tree growth as a surrogate for effects of light, nutrients, and water in cutting cycles, and data not available to them.

The effects of the biogeochemistry in the hydrological cycle on the rates of biomass storage, and



consequence of A resource availability of the right side of the figure is therefore at the obvious expense to fish resources, especially in the loss of nutrients to supporting the food chain for resident and rearing species of fish, and during summer droughts in the reduction of baseflow due to increased evapotranspiration of second growth forest. The need for thinning of clearcuts affirms the tight nutrient, water and energy budget exerted by second growth and the high competition for such resources at the levels of clearcuts.

The projected forest development and use of light, water and nutrient at the expense of fish resources over time made possible to identify from the retrospective analysis is also presented in a schematic in figure 2-1 Old Growth, figure 2-2, the age distribution of the younger and older forests between 49 and 96 years as sampled in 1995 and 1996 by Kirchhoff and Thomson. Figures 2-3 to figure 2-7 show the regain in second growth (dash line) with broken strips in figure 2-5 to 2-7 showing transition to Old Growth and returning to steady state characteristics of the Old Growth forest shown in figure 2-8 (wavy line). It is seen in figure 2 that the evolution of horizons or expected effects of clearcuts are long term and reduced productivity of fish resources through the redistribution of scarce nutrients and water and significant production into plant tissue may be expected. Only when the maturing second growth begins to breakdown and approach old growth (wavy line) of figures 1 and 2 will the levels of light, nutrients and water increase and again become available to fish resources. Otherwise these resources will be locked up in tree biomass and exported upon cutting. The continue repetition of clearcutting will, with the exception of a brief period of release of nutrients into water during the early Reorganization or Stand Initiation phase, unceasingly continue to lock up light, nutrient and water resources into production of plant biomass to the deprivation the fish resources

Discussion

Discussion

The major significance of the K&T retrospective analysis is it achieves information in advance of what could be achieved quantitatively through null hypothesis testing following the avenue of Karl Popper of the method of advancement and refutation of hypothesis on current data. An understanding, inaccessible to analysis may be achieved by supplanting a theory which can look into the future be it without the full blown Popperian methods which can only work in looking backward with data already accessible to the investigator.⁴ What retrospective analysis does is to look, with a theory, into that future the Popperian analysis would test when it becomes accessible to hypothesis testing by constructing the future from the past and looking at that future using what quantitative models which may be available.

The clear failure of Forest Service understanding of the productivity of the timber resource.

Admission's of failures in estimating second growth forest growth rates were disclosed on a resource.

An overestimation of the availability of the timber resource (where timber

harvest levels may not be sustainable) could result from using a model derived generally from higher quality sites."

Indeed, that is so and figure 1 had demonstrated it. Also, however, these authors would report the SEAPROG model employed in the overestimate was due to using stand conditions now subject to logging the higher elevation and "other" poor quality sites. However it is clear the timber yield tables based upon Barnes 1992,⁶ and earlier, especially on Meyer 1937,⁷ and Taylor 1934⁸ had found the high growth rates. I believe they had found them because of finding field samples such as described on the left side of figure 1 and because field samples the lower rates characteristic of clearcuts were likely relatively rare and mostly unknown and unavailable prior to the advent of large scale clearcutting which began in the middle century. The Forest Service did not know what the productivity of the forest was while it was cutting into valuable resources important to sustaining the once most economic product of the forest, its salmon fisheries.

The evidence of over optimistic rotation rates decades before the committee of scientists report, for example, occurred in the 1950's if not earlier with 85 year rotation, in effect, and sufficient for the belief in full time operation of three pulp mills in southeast Alaska. The effects of errors in growth rates persisted and exhibited in the published presentation to the public in 1972 in a 14 page Forest Service brochure, *Tongass Timber Management* (Revised 1972)⁹ which presented a graphical description showing a 100 year rotation in cutting Old Growth forest. Abundance was still the keynote with the further claim by the end of the 100 rotation clearcutting had produced a 60% increase in timber volume over the Old Growth volume. The Forest Service has never been made to answer by Congress for such gross failures in timber management and its inevitable adverse effect upon the fish resources of the forest. Instead, for example, the issue of clearcutting was adroitly manipulated in the process of passage of the 1976 National Forest Management Act by the ground work of 1972 and the "iron triangle" as legislative and forester McMaster who would describe it¹⁰ as members of the timber industry, the Forest Service and Congress (behind which stood the lobbies), primarily of the timber industry. It was a triangle but not a symmetric one or if so an isosceles one the small side representing those gaining least monetary benefit and having the most legitimacy of all to insist that the argument and findings of the effects of logging on non-timber resources be completed in an disinterested, scientific environment, free of ideology and economics.

Though not as an effort to frustrate examination of clearcutting McMasters would label the site of those than more moderate members of the timber industry and the Forest Service favored as "intransigent" foes of clearcutting in national forests," emphasis added, throwing those extreme advocates favoring more logging for personal and corporate profit into one group while other group, including some scientists, academics, conservationists with or without visual impressions of clearcuts, nor had neither monetary motivation or need for evidence of biological and ecological soundness of clearcutting, deserved no such classification. In the late 1990 a further increase in the rotation rate of 200 years was announced for Tongass forest timber by Jim Lyons,

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an Undersecretary to the Chief of the Forest Service. He would make with no recognition of the effects of the damage that such underestimates of the rate had done to management of forest resources, nor explain its effect would be to spread logging over wider areas to achieve the same timber production goals.

Upon asking recently a Forest Service scientist how such a error could be made, the reply was that "the planners used any thing they could get their hands on" the implication being that the quality of the information was secondary but alas was probably an honest answer and the cutting of the forest was more important than proper management of it. It is likely the early growth rates made by Taylor in 1934 especially, were made before typical clearcuts were known and the use such data of the high rates such as represented on the left side of figure 1 were common from field observations of numerous of many sites where selective logging had occurred. It was these data that basis of commitment of the entire Tongass National Forest to logging was made and at the obvious expense of its salmon resource. Much of the timber now cut must taken from a diminished timber resource from which timber to protect fish habitat is less available for protection of salmon habitat.

The Kirchhoff and Thomson paper therefore clearly gives observational support of Bornmann and Likens's *Pattern and Processes*. Kirchhoff and Thomson have an achievement of no small significance. Considering the long-term period of successional states of the forest these data are of immense importance to such relations of the use of water by second growth in relation to the productivity of the water resources in rearing fish and sustaining aquatic organisms.

Other support of nutrient deficits in forests.

Recent observations by fishery scientists such as published in the Journal of Fisheries show nutrients derived from the oceans released in the carcasses of spawned salmon have declined with the decline of salmon runs. Such studies found a large part of nitrogen requirements of the food cycle in rearing streams of young coho salmon and trout is of marine origin. Fish spawning and rearing habitat depends upon steady-state inputs of terrestrial input of solid organic material¹¹ and inorganic material and dissipation through biological decay and downstream movement under the action of streamflow. Dependence upon nutrient sources has long been recognized the increased production of rearing and feeding species of salmon and trout occurring in the period of short term nutrient increase in stream flow immediately following logging-occurring in the early part of Reorganization Phase of Bornmann and Likens classification or the early part of the Stand Initiation phase of Oliver. Sedell furthermore proposed that productivity of salmon streams could be increased by logging which could exploit the short term effect of increased nutrient outflow, along with increased streamflow, common to the period of reduced evapotranspiration due to cutting immediately following logging. The long term lockup of nutrients in growing forest biomass as opposed to forest maturity slowing of nutrient uptakes and beginnings of release back into the forest on in orders of centuries after initial cutting exasperates the ongoing loss of

employed to estimate the cumulative effects of timber harvest on streamflow¹¹ (Emphasis added), and 8 years ago, and (5) a former Forest Service hydrologist, Dan Bishop, who went into private practice—is now no longer with us—and left me a copy of his paper on evapotranspiration¹⁵ which I forwarded to Dr. Caplin of the Forest Service sometime in the middle 1990s and made a case for the effect of evapotranspiration on summer low streamflows in southeast Alaska.

Chapter 3, p. 34., third Paragraph

Not true. You have not demonstrated what the amount of water removed by second growth evapotranspiration is, as a loss in streamflow compared to Old Growth. A statement that it has been already determined in watershed analysis is not true because the WA have not dealt with this problem which has a solution. If Geier can compute landslide risks for cutting parcels of forested lands the hydrologists can compute probable water consumption and drainage losses for parcels of land or cutting blocks as well and compute or rank the most consumptive blocks, and the probability of low water and baseflow reduction. You cannot write standards and guidelines nor issue the other directives e.g. BMP's required by law without such data and analysis first. You cannot write BMP's without collecting the data and performing the necessary analytic procedures. Chapter 3 page 41 lines 11-13 simply are not true

I hope that the Kirchhoff and Thomson paper is appreciated because it clearly shows resources, which include water experience a great demand over and above the steady state phase of old growth as shown in figure 2 and water and nutrients are being passed through or incorporated in new second growth biomass shown in figure 2-2 through 2-7 by the striped areas. Water and nutrients become less available to fish resources. The K&T information and methods should constitute a start of addressing of what should have been done decades ago.

Active streamside management is challenged by these findings from retrospective analysis of tree growth.

Sedell and Swanson (1984)¹⁶ proposed higher fish biomass in second growth forests compared to Old Growth forest. The higher biomass was a projection and not an observed increase because the long period of effects of second growth on stream biomass could not be measured. It is possible that the increased light, water and nutrients would increase rearing fish biomass however figure 1 does not support higher availability of resources (A) in second growth forests greater than about 42% of the area logged. Clearcuts are hard on rearing fish resources with light, nutrients and water being used to increase the fiber rather than fish biomass.

Addressing the Forest Service accusation that the Myren and Ellis report is speculative and a new issue.

A comment in the once canceled now reactivated Indian River proposed timber sale in the *Indian*

availability of water and nutrients by growing vegetation. These ancillary observations certainly add significant additional weight and evidence supporting the previous arguments present here based upon the observations of Kirchhoff and Thomson.

Eliminating clearcutting as a harvest would severely eliminate limit the project's ability to meet Forest Plan objectives. Chapter I p.14.

The tail has always wagged this dog. The hypocrisy that in conducting it as if it was not damaging other resources, such as fisheries, with the Forest Service making every effort to conceal the facts, and inhibit study so that, in my opinion, the true dimensions of it remain unknown simply drives the issue into the ballot box and the courts. Legally, I don't believe the tail is permitted to wag this dog.

The long term effects on forest hydrology from cutting of Old Growth forest continues to support the nutrient deficit thesis.

The evidence of long term of figure 1 disagrees with the Watershed Analysis of Indian River (WAIR, 1996)¹² with its statement that Myren and Ellis (1973)¹³ "speculated" on these long term effects which included both nutrients and water. WAIR did not recognize that our symposium paper was only drawing from the published literature, and in which we went into considerable effort to assure we went no further, nor into the realm of speculation. The proximity of the Finger Mountain sale to Indian River and the fact that the Forest Service has never been forced to defend their charge that the Myren and Ellis publication was speculation renews that issue here. An answer to that charge is requested here for the present EIS process could fall into the same mold as the Indian River EIS and its clearly baseless and ignorant attitude.

WAIR also stated that the consideration of long term effects was a "new issue" to the Forest Service. I had disagreed with that in the my response to the draft EIS for Indian River because there is a history going back to my contact with Louis Bartos in 1978. I further pointed it out in my response to the draft EIS for the Indian River sale (for which the Forest Service unfortunately did not respond because the sale was canceled and no final EIS was prepared). The Forest Service history of neglect includes: (1) a persistent ignoring of the Myren and Ellis paper in the 1983 symposium published 17 years ago in all ongoing EIS processes. (Its recent citing in WAIR was unusual, the only time I know of the Forest Service spontaneously cited it.), (2) Hicks *et al.*, 1991 publication 9 years ago, (3) before the Hicks *et al.*, publication 13 years earlier in 1978, I had raised this issue with Forest Service hydrologist Louis Bartos. (Furthermore, Dr. Brendan Hicks told me while a graduate student at Corvallis he had read the Myren and Ellis paper and it had a bearing upon his interest which led to the 1991 publication), (4) Chief Thomas's directive to the Regional Forester following the Central Prince of Wales EIS 1994 Appeal dated February 2, 1994 stated, "... I direct the ... Region to initiate a monitoring plan to validate the model

River Watershed Analysis (IRWA) was made that the Myren and Ellis (1984) report was speculative. The previous interpretation of the Kirchhoff and Thomson support without speculation Myren and Ellis and the general view of Bormann and Likens that long term effects of logging reduce baseflows is due to increased demand for water in evapotranspiration, nutrients and light as indicated in figure 1. Furthermore the Forest Service in reestablishing the close by Indian River sale and drawing upon the similar turbidity and chemical conditions as the Finger Mountain sale (page 41, Chapter 3, 2nd and 3rd paragraphs) and citing USDA 1996, the Indian River Watershed Analysis the preparers of the Finger Mountain DEIS have an obligation to answer the questions which the IRWA created and described in the following text to page 11 to the comments on Indian Creek, at Hollis. Until this matter of how the Forest Service views a publication (Myren and Ellis, 1983) and called it into question in the Indian River FEIS as described below it is not clear that the Forest Service knows what it is doing in the Finger Mountain DEIS relative the watershed analysis matter raised in IRWA criticism of Myren and Ellis nor knows what it is doing in the Finger Mountain DEIS process.

IRWA on page 40, 3rd para., 1st sentence stated: "Reduction in low flows... resulting from increased evapotranspiration rates from Old Growth forest to second growth forests is a new issue." (Emphasis here and hereafter added). By labeling this a "new" issue does not shift the responsibility for the failure of recognition. Does the appearance of Myren and Ellis paper in the 1983 symposium and 17 years ago make this a "new issue"? Does the Hicks *et al.*, 1991 publication 9 years ago make it a "new issue"? And before its publication 13 years earlier in 1978 I raised this issue with Forest Service hydrologist Louis Bartos. (Furthermore, Dr. Brendan Hicks told me while a graduate student at Corvallis he had read the Myren and Ellis paper and it had a bearing upon his interest which lead to the 1991 publication. Does former Chief Thomas's directive to the Regional Forester following the Central Prince of Wales EIS 1994 Appeal dated February 2, 1994 which stated, "... I direct the... Region initiate a monitoring plan to validate the model employed to estimate the cumulative effects of timber harvest on streamflow." (Emphasis added) and 6 years ago make it a new issue? No, it does not. Is labeling it a "new issue" because of the Forest Service failure to take timely action? That is the issue and it isn't new.

IRWA on 40, 3rd para., 3rd sentence cites Hicks *et al.*, to support a Forest Service policy that low flows will be less likely to occur if the riparian zone is unlogged. "Low flow changes are most likely to occur where a significant portion of the stream riparian area has been harvested (Hicks *et al.*, 1991)." is not entirely what Hicks said and implied. They had qualified their statement which the Forest Service interprets as the basis of its management directive, "If the establishment of hardwoods in the riparian zone following clearcut logging has cause water yields of WSI to drop below predicted yields, as we suggest, then future forest harvest practices should protect conifers in the riparian zone during logging to suppress hardwood growth and thereby maintain summertime water yields." (Emphasis added.) with qualifiers such as "if... has caused... ", "may have been responsible", "were thought", "not entirely understood", "are likely",

and "possibly". They endorsed keeping Old Growth forest not second growth forest in the riparian zone. They end with, "In view of the importance of the existing hydrological records from WS 1, 2, and 3 in the H. J. Andrews Experimental Forest, continued collection of hydrological data from these watersheds is imperative." The work that made Hickes *et al.*, possible is still a work in progress and is in no means completed with a second growth period less than two decades being compared to an Old Growth forest which involved centuries to develop.

The Hicks *et al.*, publication 9 years ago stated that the continued collection of hydrological data from H.J. Andrews Experimental Forest was "imperative". Some of the reasons why it was imperative are the unanswered questions which Hicks *et al.*, posed. They include: (1) that the conifers to be protected are Old Growth conifers not second growth conifers. Why? (2) that base flows did decrease in second growth forests, which in part validates Myren and Ellis though it was tentatively assumed to be due to hardwoods. It can not be assumed that evapotranspiration rates in Old Growth forest and second growth forests are the same (3) if total water loss through evapotranspiration is a function of leaf area then is not leaf area increasing as increased shading of the conifers over top the hardwoods and total evapotranspiration will be as great as the hardwoods if not greater.

These statements may exhaust what Hicks *et al.*, said about the subject. A critical review of the Myren and Ellis paper will show it is no more speculative than the speculation which IRWA (p 40) presents in its attack on our paper with its misrepresentation of substance of what Hicks *et al.*, reported.

What is important about the Myren and Ellis paper is we proposed that the Forest Service look at this problem of second growth forests increased evapotranspiration. We reported evidence for the phenomenon which was not available from field observations at the time in southeast Alaska but theory and plant physiology suggested supporting evidence. We cited supporting evidence from Russian literature. Our paper was a cautious and deep exploration of the existing literature at the time on the subject. We clearly stated,

6-1

... Extrapolating from the literature leads to the conclusion that converting significant portions of old-growth watershed to rapidly growing second-growth risks permanently reducing summer low flows of the streams, and, thus their ability to produce salmon. It is recommended that this risk be considered in managing the forest and that effects on streamflow of converting old-growth forest to second-growth forest be included in studies of logging in southeast Alaska. " (From the ABSTRACT).

We also say in the INTRODUCTION,

... In the short term, cutting the trees reduces evapotranspiration and increases

However, James¹⁸ a Forest Service hydrologist published data for streams of the Hollis, AK area,

... Precipitation generally decreases to its lowest value each month from July through October. Though precipitation is greater for these two months is considerably less than in June, figure 9 reveals that streamflow for these two months is considerably less than in June. This results primarily from loss of water through increased evapo-transpiration rates." (Underlining added)

One page 8 of James a photograph of low flow in Indian Creek, near Hollis, shows the potential devastating potential impact of natural droughts which occur in southeast Alaska, and even though the southeast Alaska forest is a rainforest. The photograph on page 8 of James clearly shows the contraction of salmon rearing and feeding habitat of Indian Creek during the low flow. The Indian Creek watershed had not been logged at the time of the James photograph but had it the flow would have been lower due to the increased evapotranspiration of the second growth forest unless the photograph had happened to occur in the few ten or less years immediately following logging and not in the ninety or so years of higher water demands of the second growth forest. And James presents a isohyetal map which indicates precipitation according to my reading is 80 to 90 inches annually for Finger Mountain area compared to about 100 inches for Indian Creek, at Hollis or the photograph of low flow on Indian Creek at Hollis is perhaps 10 inches less likely compared to similar sized streams in the Finger Mountain timber sale area that appear to be 10 inches more likely. Nothing like a real photograph to stop all this unmitigated assault upon truth and facts so common found often within the pages of Forest Service EIS documents is peddled at taxpayer expense.

Chapter 3 page 34, third paragraph. The high elevation cuttings of the sale don't exempt each cutting area from the changes in evapotranspiration and that the cutting may be well over 20% of the watershed of the 3rd or 4th class streams draining them. These areas are above the productive salmon streams and are a potential source of sediment and landslides affecting them

6-1
6-2
6-3
6-4

Chapter 3 p. 33 bottom paragraph.

The removal of trees on one or both sides of the stream changes the solid organic inputs and sets into motion new changes in streambed configuration, width, depth, slope, composition of streambed materials, and pools and riffles. Past logging in the sale areas may have cuttings to the stream bank and hence are potentially vulnerable to any disturbance. Such changes are presently occurring many streams because past logging practices have removed trees from the sides of hundreds of miles of southeast Alaska prime salmon producing streams.¹⁹

Southeast Alaska lies in a very variable climatic zone in which major rainstorms and floods occur. On unlogged watersheds major floods caused severe damage to salmon spawning and rearing habitat. I base my prediction on observations of occurrences of past flood events in

summer base flows of streams. In the long term, however, forest succession after cutting results in increased transpiration and probably reduced streamflows. Although the short-term increases in streamflows following cutting are well-known, the long-term changes in minimum streamflow and the possible effects on fishes during forest succession are not."

In the SUMMARY AND CONCLUSIONS we say,

... The circumstantial evidence summarized here indicates that ... we may be permanently impairing the ability of many of our streams to produce salmon. The first steps in defining the problem will be to determine what changes in evapotranspiration and minimum streamflows occur as a result of various logging practices for each of the soil-watershed types in southeast Alaska. ... At the present rate of cutting our old-growth forests, especially those highly productive forests on our most productive streams, most of the damage would be done before we have positive proof that it is occurring.

We recommend that the potential for significant reductions in low-flow conditions resulted from conversion of old-growth forests be considered in evaluating potential logging plans. This consideration must be extend to the smaller watersheds and tributaries which produce most of the coho salmon and trout in Alaska and would be most vulnerable. The risks to fisheries resources are high in many streams, and the effects would be essentially irrevocable."

This is not "speculation". What Forest Service interpreted as our speculation was simply our request for the facts when evapotranspiration is likely to occur at different rates during forest succession. And it certainly is not a "new issue". How much longer will Forest Service hydrologists sit on their hands. But this is the old story of Forest Service resistance and delay. Did the reduction in low flows resulting from increased evapotranspiration become labeled as a "new issue" originate from the field offices or higher? I hope the Forest Service will not cite studies instituted recently by the Forest Sciences Laboratory as why the Region has a change of heart, if it has. A significant part of it has already been done without taxpayer's expense in the enclosures and these comments, in my opinion. I wonder how diligently the Forest Service has maintained the measurements on the H. J. Andrews Experimental Forest as recommended by Hicks *et al.*. Clearly, for southeast Alaska the Forest Service the Finger Mountain DEIS has not been paying attention in by declaring on page 3-34, paragraph 4,

... No long-term peer reviewed study have been conducted in Southeast Alaska regarding the effects of timber harvest on water yield during low-flow periods."

southeast Alaska and northern British Columbia, a few of which are listed:

- (1) A rain on snow "event" occurred on Sashin Creek at Little Port Walter, Alaska on 9 January 1942 and caused major streambed damage, bank erosion and restructuring of the stream system. It occurred on a pristine watershed, unlogged and with no roads, which is in one of the wettest precipitation belts in southeast Alaska (227.8 inches precipitation per year) and a stream "adapted" to frequent floods. The biologists at the stations reported,

... The melting of 4 to 7 feet of accumulated snow in the watershed together with heavy rains produced a freshet that not only thoroughly scoured the stream bed but also moved large logs along the banks that had not been dislodged for many years.

... Millions of developing eggs and young were washed out of the gravel ... Thousands were caught in the grass and debris but most of them drifted out of the stream."²⁰

The biologists at the Little Port Walter station at Sashin Creek predicted from the weather data and an immense counted spawning in 1941 of 84,304 pink salmon a return of 28,000. The actual counted return was 14,783 and down 56,305 pinks or a 5.7 fold decrease compared to the parent year 1941!

- (2) During the 1930s a major flood in Stacey Creek, Prince of Wales Island, Alaska transported complete trees one of which destroyed a Federally maintained fish counting weir located on the stream.

- (3) Major floods were observed in 1917 removing eggs and larvae from spawning beds of the Skeena River, British Columbia, Canada (Neave, 1953).²¹ The Nass River also in British Columbia overflowed in 1917 and drove natives from their village (though reoccupied later, see Shotridge, 1919).²²

The first several pages of my criticism here was devoted to establishing the fact that forest practices, and clearcutting especially, i.e., 100 % of the basal area logged, a use a lot of resources to reforest after cutting occurs. The Forest Service so patiently ignores this fact on page 7, Chapter 3, 2nd paragraph, of the DEIS. The differences in water and nutrient flows hence stream production and biomass of Old Growth and second growth forests is ignored..

As regards to Cumulative Effects Chapter 3, p. 25. Line 10. It is the 17% or 9,370 acres

projected to be logged by year 2056 which produces or provides spawning habitat and stores water and nutrients within which major salmon streams rest. The aquifers in these areas outside of the immediate riparian zones provide water and nutrients in salmon spawning and rearing habitats of most of the fish and around which the remaining 25,247 acres of Old Growth of the once intact 35,617 acres of Old Growth forest. There is no published assessment of the drain and long term continuous demand upon the water and nutrient resources in such areas generated by cutting and summarized in figure 2 of this criticism.

Chapter, 3 p.34 third paragraph,

... The risk of significant cumulative flow reduction [1] is very low for all watershed under all alternatives, [2] as a result of stringent riparian protection, low road density, and low cumulative timber harvest. Harvest of key watersheds [3] will be well below the 20 percent of concern identified in the Forest Plan for risk of cumulative watershed effects." (brackets and numbers inserted..

The Forest Service has no basis for any of the assertions in this paragraph. For [1] the Forest Service has no data nor measurements published to defend this position. Indeed, the published information of Myren and Ellis suggests to the contrary. The analysis of the K&T data at the beginning of this report also points to long-term water use of second growth forests and cumulative effects as more and more of the logged 20% parcels of the land area are added to the increasing evapotranspiration demand of second growth. [2] Ground water storage is not just within the riparian zone, a zone established for the purposes of preserving primarily Old Growth and not specifically designed for protecting groundwater. Indeed, your record of the importance of ground water is dismal, as represented for example in ignoring the Myren and Ellis publication, and the issue in general. [3] The incremental 20 percent cutting level portions may well avoid the destructive effects of higher flow immediately following logging if the 20 to 35% of cutting but such effects last seldom more than 10 years after cutting as identified in the Forest Plan. The long term cumulative risk is not avoided, and each 20% parcel added to the previous 20%'s is no longer at a satisfactory level of risk.

Chapter, 3 p.37 Landslides.

To locate cutting on Class III and Class IV streams above fish producing streams does not justify the assumption the fish producing streams are protected.

Chapter 3 p. 43 second paragraph,

The idea that only stream buffers and generally wider than riparian areas hold all the water is nonsense. The entire watershed is the reservoir.

Now having the unusual high level of suspended sediment in the period of logging the Paustian paper states:

... An empirical sediment rating curve approach was used to calculate suspended sediment discharges (Flaxman, 1975; Porterfield, 1972). Pre and Post-disturbance sediment rating curve regression lines were developed from log transformed suspended sediment and discharge data. A students-t test was used for differences in regression line coefficients (Snedecor and Cochran, 1967)⁴. (Underlining added.)

Paustian has placed the highest increased suspended sediment set of observations in the wrong sampling period and then reports the increase as not significant.

F.S. Mistake #4.

Run-off in October 1978 of the before logging period contained by far the largest flood event of the entire study. The quoted methodology employed in mistake #3 can only test for differences in regression line coefficients of suspended sediment and streamflow discharges that occur over a similar range of streamflow discharge values. If the range of values of streamflow discharge is different between the two periods of testing they can only be tested by Paustian's method if the relation between streamflow and sediment is linear and suspended sediment is tested over similar ranges of streamflow discharge. In the Indian River data his relation is not linear. In fact suspended sediment and streamflow discharge is never linear, it is curvilinear and monotonic. That means the slope of the sediment relation changes with the level of streamflow discharge and higher levels of discharge high levels of sediment may be expected. There is not just one slope for each period but many which increase with streamflow discharge increase. Under such a situation two regression coefficients, one for each period, can only be tested if effects of higher streamflow discharge on sediment in one period compared to the other is adjusted to the same levels of streamflow in each period and differences in sediment levels then tested

Paustian has reported results of testing only two regression coefficients for suspended sediment obtained from different ranges of streamflow discharge. The only way to make a valid comparison is to employ a covariance test. Such a method tests for differences in the amount of suspended between periods adjusted to the same level of streamflow discharge in each period by removing

The Forest Service has had more than sufficient time following Greier's (1996) sediment analysis, procedures ratings and book keeping procedures possible with computers to keep track of each parcel of timber logged to determine what the effect of increased evapotranspiration would be on low summer streamflows and baseflows. It would inform the Forest Service of what the cumulative risks are of incurring decreased low flows from the cumulation of areas logged. Evapotranspiration losses occur at the high elevations and the over all loss

Finally one comes to the citation of the Paustian 1987 paper (page 40 and 41, Chapter 3 second paragraph) and under Water Chemistry (third paragraph) in which the Watershed Analysis of Indian River (cited as USDA 1996) employs the Paustian data of suspended sediment for its conclusions. This paper is technically wrong, not wrong like my considered assessment or judgement compared to say your considered assessment or judgement is wrong, but wrong like 2 plus 2 equals 10,000! You defile the entire Forest Service establishment when you depend on this paper for facts because it is an accredited publication and the errors of the publication which can be completely and openly demonstrated. (Indeed the U.S. Department of Justice should investigate the strange facts around the first person to analyze the Indian River data before (her) departure to Europe, and what (she) found, before Paustian picked up the baton.)

6-1

The Paustian paper and all the conclusions about differences in suspended sediment before and after logging on Indian River are incorrect.

FS Mistake #1.

The Paustian paper states (page 158):

... The highest monthly Qs [suspended sediment discharge] in ... period of record ... Occurred in conjunction with unusually high runoff during October of 1979 prior to significant logging disturbance. No apparent changes in the relative magnitude or distribution of month Qs are otherwise indicated by the data". (Text in brackets and underlining added).

This quote cites "October of 1979" which is incorrect because if it were that then it would be Water Year 1980 and logging was occurring in 1980.

FS Mistake #2.

Because of mistake #1 and because the Paustian paper states the "... unusually high runoff during October of 1979" the reader is lead to believe that the unusually high suspended sediment occurred during logging because October 1979 is in Water Year 1980, the period in which logging occurred.

FS Mistake #3.

the effect of differences in suspended sediment due to different levels of streamflow discharge between each period.

A covariance analysis is required to analyze these data.

In the debate in the enabling legislation of the 1991 Tongass Timber Reform Act, Senator Frank Murkowski would weaken the legal definition of the classification of Class III and Class IV streams to protect salmon resources because of a reliance on the information presented in the Paustian paper (see previous comments on the Paustian paper). It is hard to conceive that the Senator would have used the paper had it shown that suspended sediment increased after logging which it did and hence to justify more restrictive regulations of logging activities near salmon producing streams. The statement on the bottom page of Chapter 3, page 40 and page 44 first paragraph has no basis because Paustian's analysis was faulty. See other references here to this analysis.

The facts are with all the smoke and tons of EIS documents the Forest Service has exactly nothing of any scientific merit on measurement of suspended sediment in Alaskan waters as it may or affect or may not affect fish resources. The Forest Service has nothing factual on this subject as based upon the published field observations in Alaskan waters, and including the Meehan et al., 1969 publication contribution to the subject.²³

The Forest Service position that clearcutting is not damaging to other resources is philosophical because there is no science that establishes such facts.

7-1

Indian Creek near Hollis, discussed previously, is the site of the famous-- and at the time, the most comprehensive logging and salmon studies ever conducted. Known collectively as the Hollis Studies it is also the place from which Meehan et al. 1969 would initially promulgate the fully edited document of nonsense entitled "Some Effects of Clearcutting on Salmon Habitat for Two southeast Alaska Streams" a document that fails to meet any level of analysis tolerable to the practice of science. Meehan et al., establish in the published scientific literature with three coauthors, the basic deception that clearcutting did not "appear" to damage fish resources. Its official debut in the annuals of Alaska fisheries scientific literature were,

... the timber harvest as practiced on these watershed did not appear harmful to salmon habitat or populations."

... Clearcutting apparently did not adversely affect the salmon spawning habitat."

... Results show that salmon populations in the study streams did not decrease after logging; in fact, they generally increased, ... two concurrent events have affected salmon production in Hollis streams: (1) removal of fish traps from

nearby waters and (2) clearcutting. The probable increase in escapement resulting from trap removal could have masked any change in production resulting from clearcutting--if a change occurred."

The reader may note the three statements are internally consistent only with the proposition that clearcutting may have increased the runs or not adversely affected salmon spawning habitat. Now think about that sentence of ecologically traumatic effect of clearcutting and the road building associated with the idea that it could increase the runs. The logical inconsistencies of these three statements also documents for all time-- since it is published, in which the first two statements agree with each other with the conclusion that clearcutting did not appear to affect salmon habitat or populations and differ from the last in which a change in production could be masked. One cannot conclude, because potential effects are masked, that no effects appeared to be present because the existence of potential effects are admitted. To say they did not appear simply admits a problem in the technical procedure to make a valid observation. It is a deception to state an effect does not appear to be present when it is known that if the effect was present it might not be detected. In fact this problem had been addressed by Pella and Myren in *Caveats concerning evaluation of effects of logging on salmon production in southeastern Alaska from biological information*²⁴ carried the warning (p. 137) that,

... Use of escapement estimates to suggest "no effect due to logging" is a deception unless adequately qualified." (Underlining added.)

There was no qualification for two to the three statements cited above and published in Meehan et al. And it is well documented in the fisheries literature but also verified in court testimony that the sizes of escapements were the measures employed to detect logging effects. (These court procedures were over the very pulp mill which the Forest Service had induced US Plywood Champion to hold on to its timber cutting contract and to construct the mill.)

... Escapement counts can tell us something about the health of a run to a particular stream in the following ways:

- If, following logging few or no salmon return to stream X while escapement in an adjacent unlogged streams are high or "normal", we would immediately suspect an effect of logging and would try to find out what happened and ...
- If following logging, escapements in stream X are "normal", when compared with past escapements in that stream and when compared with escapement in adjacent [unlogged] streams, we would not feel that logging had adversely affected production of salmon in the stream. This is what happened in Harris River and Twelvemile Creeks and this is what is happening in other logged streams" (Underlining added.)

4. See pages 4-5 of "Historical perspectives" in Oliver and Larson's *Forest Stand Dynamics* for the pitfalls in the failure in use of strict hypothesis testing versus its failure in heavy dependence upon such approaches in Jon R. Louna's book *Hidden Forests*, pages 202 to 206 about the research experience on the Andrews Experimental Forest in Oregon.

5. Everest, H.P., Swanson D. N., Shaw III, C. G., Smith, W.P., Julin, K.R., and S.D. Allen. *Evaluation of the Use of Scientific Information in Developing the 1997 Forest Plan for the Tongass National Forest*. Gen. Tech. Report PNW-GTR-415, October 1997. 70pp, p.34.

6. Barnes, G.H., *Yield of Even-aged Stands of Western Hemlock*. Tech. Bull. 1273. Washington, DC: U.S. Department of Agriculture, Forest Service, 52pp.

7. Taylor, R.F. 1934. *Yield of Second-growth Western Hemlock-Sitka Spruce Stands in southeast Alaska*. Tech. Bull. 412. Washington, DC: U.S. Dept. of Agr. Forest Service.

8. Meyer, W.H., 1937. *Yield of Even-aged Stands of Sitka spruce and western hemlock*. Tech. Bull. 544. Washington DC: U.S. Department of Agriculture, Forest Service. 86pp.

9. Forest Service, Alaska Region. Juneau, Alaska.

10. Le Master, D. C. 1984. *Decade of Change: The remodeling of Forest Service Statutory Authority during the 1970s*. Contributions in political Science, Number 113. Greenwood Press. Connecticut and London. 290pp p. 19.

11. Sedell, J.R., Everest, F. H., and F. J. Swanson. 1981. *Fish habitat and streamside management: Past and present*. In Proceedings of the Technical Session of Effects of Forest Practices on Fish and Wildlife Production. A Joint Technical Session (ed. H.C. Black), Society of American Foresters, Orlando, Florida. September 29, 1981. p. 41-52.

12. Sitka Ranger District and Chatham Area Supervisor's Office, Forest Service, Chatham Area, Tongass National Forest. 166 pp. plus appendices.

13. Myren, R.T. and R.J. Ellis, 1984. *Evapotranspiration in forest succession and long-term effects upon fishery resources: A consideration for management of old-growth forests*. In Meehan, Merrell, and Hanley, Eds. Proceedings of a Symposium Sponsored by Alaska District, American Institute of Fishery Research Biologists, Northwest Section. The Wildlife Society, Alaska Council on Science and Technology. Held in Juneau Alaska 12-13, April 1982. 425p. p. 183-186.

14. Directive from Bill McLeese, USDA Timber Management Washington D. C. dated February 2, 1994 to appellants of the 18 page appeal finding for the Central Prince of Wales Project signed by Chief Jack Ward Thomas.

15. Bishop, D.M. 1987. *The effect of logging in Ginnik Creek watershed upon water yield*. Prepared for the Sealaska Corporation. January 27, 1987. 18 p

Bishop makes text book assumptions about evapotranspiration and compute a water budget over 60 years and concluded that a decreased in streamflow begins to occur about 30 years after cutting and drops to its lowest

This affidavit was very important because it placed the Forest Service on written record how they, through its chief scientist Bill Sheridan, and author of the affidavit, depended upon adult escapement to detect effects of logging.

These logical errors should have been recognized and they were not. Why. Well in my view two timber sales for the third pulp mill to be built in southeast Alaska had defaulted with the buyers failing to maintain the options of the timber contract agreements. In 1968 a third buyer was found US Champion International and a copy document circulated in its pre-published form assuring that the scientist could not determine effects of logging. The official publication date of the Meehan et al. publication was 1969 since it takes time since the writing to get it into print. These statements published in 1969 by Meehan et al.,²⁵ and as the senior author bears the main responsibility for them. The absurdity that clearcutting could increase runs had to be introduced here to keep ones perspective about the Forest Service in balance, and other off balance. A whole array of public relations gimmicks such as depicting an artists rendition of what a clearcut would look like on the cover--in retrospect now showing obvious damage to the fish resource and four one sentence like "Abstract" under its back cover suggesting to effects of logging were found, no doubt make old decreased members of the federal Bureau of Budget turn over in their graves.

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February 23, 2000.

Endnotes

1. Kirchhoff, M. D. and S.G. R.Thomson. 1998. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration, Research Final Report. Grants: W-24-4,5 and W-27-1, Job 2.11. June, 1998, 37pp.
2. Bormann, F. H., and G.E. Likens. 1979. *Patten and Process in a Forested Ecosystem: Disturbance, Development and the Steady State based on the Hubbard Brook Ecosystem Study*. Springer-Verlag. N.Y. 253 pp.
3. Oliver, C.D. *Forest Development in North America following Major disturbances*. Forest Ecology and Management 3 : 153-168.

January 19, 1998
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DRAFT#3

Effect of forest cutting on critical baseflow habitat.

Abstract

Use of a fundamental evapotranspiration equation (FEE) demonstrated similar baseflow recession characteristics for the H. J. Andrews Experimental Watershed Number One, a very small watershed of an inland Oregon forest with infrequent summer rainfall and large saturation deficit and Stacey Creek, a large watershed of a coastal drainage of an Alaskan temperate rain forest with frequent summer rainfall and lower saturation deficits. These results for August showed the average evapotranspiration difference between baseline and second growth forest of WA#1 of AEF determined from August weir measurements of yield published by Hicks *et al.*, (1991) was 0.032 area-mm/day and smaller than 0.08 predicted from baseflow analysis of recession coefficients and FEE for the Andrews WA#1 drainage and the Stacey Creek drainage.

The baseflow recession coefficients were derived from the simple exponential $q_t = Q_0 \cdot e^{-\alpha \cdot t}$ and a method of identifying three or more consecutive daily baseflows for the 1953-1961 period prior to clearing. This method applied to the Andrews WA#1 before cutting the watershed and from two separate analysis found the recession coefficient to be 0.90 which compared favorably to 0.89 derived for a similar baseflow analysis of the 1965 period prior to cutting on the Stacey Creek drainage. For second growth forests the recession coefficient of 0.84 was determined from hourly observations for Stacey Creek during the 1993 drought and twenty-six years after logging commenced and 40.5 percent of the timber removed. These results compared favorably with recession coefficients 0.82 and 0.84 from two separate analysis of the daily observations of baseflows from second growth of the Andrews WA#1 of the period 1979-1984, a period beginning 18 years after initial complete clearing.

Comparison of similar recession coefficient rates between 0.82 and 0.84 of the two watersheds one completely cleared the other with 40.5 percent cleared suggests an upper limit on the rate baseflows may decrease because physical evaporative demands far exceed the capacity of plants to release water through transpiration.

The hourly observations during the 1993 drought at Stacey Creek showed baseflows could be decomposed into recession rates of day and night variation. Such diurnal variation in the rate of recession showed the rate of removal of water by daytime evapotranspiration was double the night rate by export of drainage waters and low level evaporation from the watershed.

Present Address: R.T. Myren, 3320 Fritz Cove Road, Juneau, AK 99801

level and stabilizes at about 60 years. He does not compute the eventual rise in the flows after 60 years as an old growth type of forest is established.

16. Sedell, J.R. and F.J. Swanson. 1984. *Ecological characteristics of streams in old-growth forest of the Pacific Northwest*. In *Proceedings, fish and wildlife relationships in old-growth forest symposium*. American Institute of Fishery Research Biologists, Asheville, N.C. 425p. p.9-16.

17. Directive from Bill McLeese, USDA Timber Management Washington D. C. dated February 2, 1994 to appellants of the 18 page appeal finding for the Central Prince of Wales Project signed by Chief Jack Ward Thomas.

18. James, G. A. 1956. *The Physical Effect of Logging on Salmon Streams of Southeast Alaska*. AK For. Res. Center, Station paper No. 5, September, Forest Service, Juneau, AK 49pp.

19. Admitted by the Forest Service.

20. Davidson, F.A. and S. J. Hutchinson. 1943. *Weather as an index to abundance of Pink salmon*. Pacific Fisherman, Miller Freeman Publication, Seattle, Washington, May, p.21-29, p. 25.

21. Neave, F. 1953. *Principles affecting the size of pink and chum salmon populations in British Columbia*. J. Fish Res. Bd. Can., 9(9):450-491.

22. Shortridge, L. 1919. *A visit to the Tsimshian Indians*. The Museum Journal, Univ. of Pennsylvania Philadelphia Vol X March-June 1919. No. 1 and 2. 49-67. p. 64.

23. Studies at Hollis reported an increase in fine sediment in spawning gravels of Harris River and Twelvemile Creek during logging and fine suspended sediment originating in the Twelvemile Creek watershed was seen 4 KM into the bay from the outlet of the stream in which road building upstream was in progress (Sheridan and McNeil, 1968). * While such events were unfolding Meehan et al., 1969 would report no difference between suspended stream during logging compared to before logging.

*Sheridan, W. L. 1968. *Some Effects of Logging on Two Salmon Streams in Alaska*. Journal of Forestry, February 1968 (reprint) p. 128-133.

The suspended sediment analysis published in Meehan et al., 1969 also suffers from employment of an inappropriate complex covariance model which wastes degrees of freedom unnecessarily and results in an unnecessary insensitivity to detect levels of increased suspended between before logging and during logging periods. The raw data is published in the document which permits examination of the data and procedures and permits more appropriate models which show suspended sediment in fact increased during logging.

24. _____, 1974. Northwest Science, Vol. 48, No.2, 1974. p. 132-144

25. Meehan, W.R., Farr, W.A., Bishop, D.M. and J.H. Patric. 1969. *Some effects of clearcutting on salmon habitat of two southeast Alaska streams*. U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station, PNW-82. Juneau, AK 45p.

Effect of forest cutting on critical baseflow habitat.

Introduction

Resident and rearing salmon trout and char as well as sculpin and the entire faunal association of invertebrates, bacteria and the plants depend upon the level of minimal summer baseflows to provide living space and maintain sublethal streamflow temperatures. Such living space during the summer months may represent only two or three percent of annual flow (Hicks *et al.*, 1991). Low stream flow frequency, for example, is once every three years in Porcupine Creek on Elinor Island (Murphy, 1985), unexpected, perhaps to some, in the Tongass, a rain forest. These low summer stream flows are particularly developed in the streams in the rain-shadow of the northern islands of Baranof and Chichagof Island and extend southwest into the regions on Prince of Wales Island including the Stoney Creek watershed.

Forest succession (Odum, 1969) is a process of vegetation change affecting fish resources which can modify water yield at low stream flow stages of late spring, summer and early fall. In the absence of succession, such as immediately following cutting reduction in plant transpiration occurs and stream flows and soil moisture increase. Low stream flows and flow minima therefore tend to be higher following cutting for a short-term and stream levels increase (Hewlett 1982, Federer 1973). The amount of water used in transpiration by plants and intercepted and evaporated from leaf surfaces then increases as revegetation occurs and plant density increases and low flow levels decline. Kittridge (1948), while noting "in the absence of actual data", presents a diagram which shows a regional total annual precipitation of 22 inches per year and annual streamflow yield of about 6.5 inches. Then after forest cutting stream flow yields rapidly increase to an annual yield of 9.5 inches for a short term then rapidly decrease as the second growth forest develops to 2 inches from an age of about 40 years. The yield then slowly changes and by 240 years yield is about 6 inches which approaches the annual yields of 6.5 inches prior to cutting. The Hubbard Brook Experimental Forest model of forest development and export of drainage water (Bormann and Likens, 1979, Figure 6-8) model of forest development showed comparable increase and declines in yield following logging. The SMSS model and Figure 6-8 according to F.H. Bormann (personal correspondence) "... is not the direct result of computer modeling. It is based on direct measures of hydrology during the reorganization and agradation phases of our shifting mosaic steady state model of forest development and presumed hydrology changes that might occur in our transition and steady state phases. The SMSS Model is based on biomass projections obtained by the JABOWA forest growth simulation. " model Kittridge (1948) also acknowledges (p. 243) that in "no case has there been a rigorous determination of the separate values for transpiration, evaporation and deep seepage."

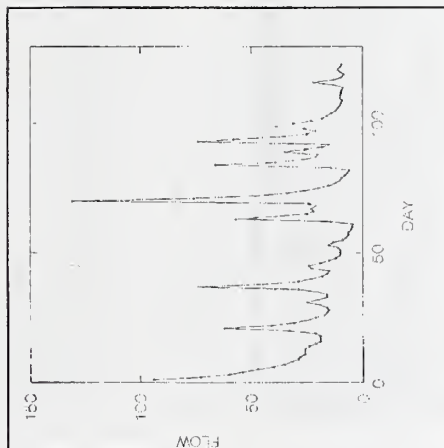


Figure 1. Streamflow (cfs) and hydrograph for Stoney Creek, Alaska May 24 - September 20, 1993 (USGS stream gage record)

The models for long term changes in stream flows are supported in the literature by different sources of related information. For example, transpiration in plants increases as rates of growth increase is recognized by plant physiologists (Wisler and Brainer, 1959). Comparing forests in early, middle, and later states of succession, Molchanov (1960) found in forests of different tree species evapotranspiration highest at the intermediate stage of succession.

Myrcen and Ellis (1984) concluded that evidence in recent literature of long-term flow reduction due to increased evapotranspiration of second growth forests was primarily circumstantial. To the author's knowledge studies from the H. J. Andrews Experimental Forest (AEF) in Oregon by Harr (1983) and

Hicks *et al.*, (1991) report the first published rigorous field evidence within the "growing season" of long-term changes in low stream flows due to forest succession. Hicks *et al.*, (1991) suggested that hardwoods established within the riparian zone following cutting which replaced conifers may have reduced annual and growing season water yields for 19 years and into 19 to 27 percent of the period of rotation after a short period lasting nine years of increased streamflow. Harr (1983) and Hicks *et al.*, attribute the decrease in low flow to hardwoods with high evapotranspiration demands invading riparian areas following removal of an Old Growth coniferous forest. Hicks *et al.*, believed reduced summer flows could persist for decades until conifers suppress the riparian hardwoods and reduction in summer low flow with return to pre-logging levels may be possible 40 - 60 years after cutting. However, Harr (1976, 1980, 1983) also reported in some local areas water from fog condensations on tall trees and drip to the forest floor was a significant source of water during low stream flows.

Large differences were found in long term evapotranspiration in Old Growth compared to second growth of the AEF compared to the Stoney Creek drainage. These differences might be explained in comparison with the hydrographs of the WA#1 of AEF for the summer of 1981 and an extreme drought and figure 1 for the Stoney Creek drainage and lowest summer lows recorded of 1993. The long sustaining periods of relatively low rainfall continuing decline in stream flow with only with few large rainfall events and small interruptions or plateaus followed by a continuous recession proceeding through day 100 in Watershed Number One of AEF (figure 2) is not observed in Alaskan rain forest streams such as Stoney Creek drainage with more frequent characteristic

upward spikes of sufficient magnitude to add more water the ground water storage. These differences due to climate, and rainfall the wide geographic separation between a inland forest in Oregon compared to the coastal to rainforest of southeast Alaska.

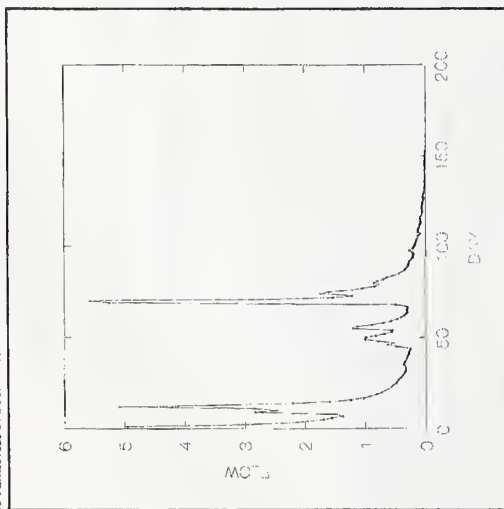


Figure 2. Streamflow (cfs) for Watershed #1 of Andrews Experimental Forest, Oregon summer 1981. (U.S. Forest Service weir record).

The southeast Alaska rain forest regime can clearly be described as a dynamic and quick recharge and discharge of baseflow aquifers and bank storage due to shallow soils and the higher frequency of rainfall and the brief low stream (Figure 1). In contrast the forest flows of less summertime augmentation of the Andrews Experimental Forest drainages in which recharge is much less seldom during the summer growing season and evidences of augmentation may be only small plateaus or short spikes on the hydrograph among the infrequent large spikes (Figure 2).

A common property of both watersheds was the well developed summer saturation deficit. Evidence of a saturation deficits in southeast Alaska streams was indicated from declining runoff reported from May through August while precipitation increases from June through October (James, 1964, p. 18). For the long term studies

at the AEF apply especially to showing characteristics of a forest with very high measured summer soil saturation deficit (Waring and Franklin, 1979) and more predictable less frequent summer rainfall compared to southeast Alaska rainforest.

The level of stream flows which are considered as low stream flows are usually only approximations in hydrology text books. The general consensus is that such flows begin in the range of above, but not too far above, the beginning of the appearance of baseflow which constantly occur but are hidden by quick flows and storm discharges. Low stream flows of baseflows and bank storage originate from water stored in stream banks and aquifers and remnant water drainage from previous rainfall events and not absorbed in aquifers. Because drainage systems are networks composed of variable topographical and geological conditions and features, the flows in such systems are usually mixtures of waters from different origins within the system. Low water flows are then baseflow and may be residual waters of bank storage from earlier higher flows continuing to drain. The flow drainage rate between different forest succession periods may include during the early stage of low flows both baseflow recession and the remnant of flood flows not absorbed into storage. For drainage systems without lakes the baseflow contribution to flow increases as the rate of remnant augmentation flows decline. Such flows may be then governed by the proportion of the amount of water remaining in storage as indicated by the exponential decrease. The cusp-shaped indicators of baseflow and possibly bank flow between declines and rainfall augmentation then appear on hydrographs as straight line segments for the flow expressed in logarithms. The flow drainage rate or slope constant is therefore simply the difference in the logarithms of successive stream flows.

Finally, it should be remembered, that the high rates of evapotranspiration which reduce summer baseflows occur sporadically during the growing season interposed by periods of augmentation. The major low flow event of the summer baseflow minimum is probably the most important and critical determinant in the summer environment of aquatic organisms.

Methods

The purpose of this analysis is to find evidence, if present, of the long term effect of cutting upon low summer low flows. Sufficient data now exists and methods using diurnal variation in baseflows make possible comparisons between flow drainage rates of an uncut forest and advanced stage second growth forest.

Baseflow flow drainage rates were determined from selected from the hydrograph reporting either streamflow by hour or from the average flows of the USGS Daily Streamflow Record with the following

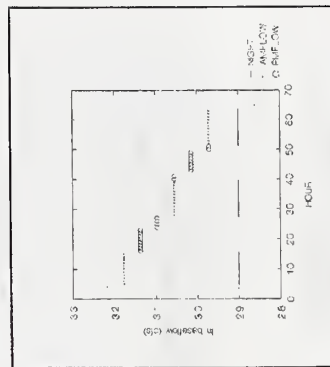


Figure 3. Diurnal variation of baseflow of Stanley Creek, Alaska, June 4-5, 1993

these hourly observations.)

Recession coefficients K were also calculated for the entire period for each date.⁴ These slope constants -a may be converted to the familiar recession coefficients K for each 12 hour night and day period through the relation

$$K = 1/e^s = e^s$$

where e is the base of natural logarithms.

The fundamental evapotranspiration equation

The basic relationship in this paper employed to estimate evapotranspiration⁵ rate difference following a determination of initial baseflow and slope constants is,

$$evap_{t,t'} = C \times E_x \times Q_0 \times \int_0^{t'} [F_1(z) - F_2(z)] dz \times 1/t' \quad (1)$$

where Q_0 is initial baseflow, $e =$ converts initial baseflow Q_0 cfs to area-inches/day,⁶ $f(z)$ is the baseflow relation between two different flow regimes (in this paper these regimes $f(z)$ are in the form $q = Q_0 + K_1^t$ for $j = 1$ and 2, f_1 is the fraction of the disturbed watershed in which the difference in recession coefficients $K_1 > K_2$ applies, and time t , the iterated variable at which $1/2$ of the water evapir is removed by evapotranspiration.

The solution is accomplished by an arbitrary computational device to obtain a solution to (1) through an iteration of t to t' which divides the difference in the volume of water moved by the two regimes into two equal parts at $t = t'$ (Myren, 1991, unpublished). Division of the integral by t' when $f_1 = 1$ then the right side of (1) gives evapir as the evapotranspiration rate difference between the two regimes. It can be seen that the time intervals are from 0 to t' and from t' to infinity, and division of the later implodes the result into minus infinity, an unsettling thought.

The three forest hydrological baseflow regimes of interest to the fishery biologist, the Old Growth, cleared and second growth, appeared in Stanley Creek basin since the beginning of cutting in 1965 though only the Old Growth and second growth regimes are the central focus here. Although complex curves may better fit relationships between streamflow and time (Federer, 1973) simpler equations with fewer parameters may provide sufficient approximations and greater manipulation and utility. For such reasons I have

characteristics: (1) that an initial stream flow N_0 be identified which marks the transition zone between the steep drainage rates of storm flows and quick flows and the slower exponential like decline; (2) at least three consecutive daily discharges $\leq N_0$ (ft^3/s^2); (3) the flows transformed to logarithms lie approximately on a straight line, and (5) because of the uncertainty of when augmentation ceases in some cases steps (2) through (4) identifying flow segments in 1992 and 1993 (Sample 1) were repeated in 1996 (Sample 2) and the results compared. The results of analysis of segments of stream flow characteristics were identified by Riggs (1964) and hence are indicators of baseflow recession. However, only the last segments of the 1993 hydrograph approach near the 10 successive data points recommended by Riggs (1964) for identification of baseflow. Three or more permits a least square regression analysis and estimation of fit and standard error of the estimate for the daily streamflow instead of hourly as described for the diurnal analysis of hourly flow. The initial baseflow N_0 was determined by inspection of the hydrographs and the inflection points where quick and storm flows are disappearing the beginnings of the cusp shaped exponential declines in flow appear. N_0 was selected as highest common streamflow following storm and quick flows diminish after major augmentation events and reduced slope constants begin to appear. Peak flows of each hydrograph following short term augmentation and the first highest following peak flow were not used for discharge data to determine slopes and recession coefficients.

The relations between the diurnal variation of baseflow drainage due to gravity flow and evapotranspiration were discovered when the hourly data from the Stanley Creek USGS stream gauge readings⁷ converted to streamflow were plotted for June 4-6, 1993 (Figure 3) with the following conventions:

- (1) that nights and days were defined as 12 hour periods beginning at 6 pm and 6 am respectively and,
- (2) that the periods were displaced by nine hours.

The resulting graphs of streamflow would show therefore the effect of the night streamflow drainage appearing at 3 am the following day and the day streamflow effect appearing at 3 pm in the afternoon each nine hours after the effects began at 6 pm in the evening or 6 am in the morning, respectively. In figure 3 then the both flows labeled outflows and inflows are flows that taken of their respective characteristics 9 hours earlier of daytime evapotranspiration or the night time absence of evapotranspiration. The slopes of the baseflow recessions were calculated for each night and day period in which augmentation was not present (Table 1). Augmentation was assumed in the hydrographs for which in any 24 hour period the constant or monotonic decline in baseflow was broken by an increase in one or more hours.

The rates of baseflow recession obtained from least square regression of hourly observations of the relation $\ln y = b - a \cdot \ln x$ where y is baseflow, a and b constants, x time in hours, and \ln the logarithms to the base e confirmed the similar rates obtained from the daily discharge in cfs per day reported in the yearly USGS published Water Resources Data record as averages of the 24 hourly observations. Where my paper (Myren 1991, unpublished)⁷ relied only upon average daily streamflow in cfs and therefore that at least 3 days were required to estimate the baseflow recession rate by least-square regression analysis the hourly streamflow data provided 12 hours night and day periods within the 24 hour period and provided standard errors of estimates of night and day periods. (The average daily streamflow published USGS Water Resources Data record are of

selected for all three regimes the simple baseflow relation

$$q_t = Q_0 * K_t^i$$

where q_t is baseflow at time t , Q_0 is initial baseflow at time $t = 0$, and K the recession constant. Q_0 and K ($i = 1, 2, 3$) identify the baseflow regime and response under particular induced changes in rates of evaporation, interception, and transpiration occurring in the basin and in logged portions of the basin.

The WA#1 of AFF data and yield methods described by Hicks *et al.* (1991) were used for comparisons with the evapotranspiration difference for the Stacey Creek drainage.

Results

Slope constants from diurnal variation.

Baseflow is water made available for stream flow, and except for tree drip from moisture condensing on leaves and needles from fog, and is water from ground storage and aquifers. The hourly stream gage data available since 1989 showed diurnal variations in baseflow. In figure 3 the change in slope constant between water subjected to daytime evapotranspiration and from separate night time removal only by gravity flow and night time evaporation was observed. Above 16 cfs the diurnal effect of the separation of effects of night and day on flow disappeared and the gravity flow and evapotranspiration components of the rate of decrease in baseflow were no longer resolved into the individual effects of the diurnal fluctuation (upper left in Figure 3 not shown).

There were nine graphs for table 1 with diurnal fluctuations with at least one 24 hour period comparable to one of the 24 hour periods of figure 3 each showing that the slopes of decrease in streamflow were greater during the baseflows of day periods compared to night periods. These data therefore indicated that during the night the withdrawal of water from the watershed was from baseflow and low level night-time evaporation and at a low rate compared to the higher rate of baseflow reduction by evapotranspiration during the day. These data also show for the unprecedented 1993 summer low flows by comparing average flows (bottom of Table 1) that at baseflow less than 16 cfs while following each augmentation evapotranspiration slope constant remained constant, while the rate of water removed by gravity flow tended to decrease over time (Table 1).

Table 1. Slope constants baseflow recession rates (cfs) over 12 hour night and day periods for Stacey Creek, 1993 and recession coefficients K for over 24 to 72 hours at baseflows ≤ 16 cfs.

Date	1st night	1st day	2nd night	2nd day	3rd night	3rd day	K by hour
6/4-6/5	-0015	-0045	0	-0068	-	-	.895
6/13	-0019	-0167	-	-	-	-	.817

7/7-7/9	-0022	-0123	-0023	-0059	-	-	.802
7/15-7/16	-0045	-0114	0	-0138	-	-	.818
8/2-8/4	-0039	-0129	-0056	-0136	-	-	.770
8/5-8/7	-0110	-0143	-0023	-0083	0	-0072	.825
8/8-8/10	0	-0109	-0066	-0147	0	-0171	.838
8/25	-0090	-0129	-	-	-	-	.744
8/31-9/2	-0048	-0080	-	-	-0055	-0115	.872
Sum	-0388	-1043	-0168	-0634	-0055	-0359	.823
AV.	-0043	-0116	-0028	-0105	-0018	-0119	.823

There are 24 observations for a one day analysis, e.g., 6/13 and 8/25 to 72 observations for analysis over three days e.g., 8/5-8/7.

From table 1 the average rate of baseflow recession during the night period measured every hour from the stream gage was found to be -0.00344 cfs (Table 2). Because this night-time decrease in baseflow can be assumed to be free of direct effects of photosynthesis on plant transpiration because the night time instantaneous rate of change, or slope constant, is a measure of streamflow drainage under the influence of gravity alone. Because gravity flow will continue during the day the effect of day-time transpiration and evaporation could be estimated by subtracting 1/2 of the night rate from the day rate -0.01132 cfs (Table 2) of the night rate -0.00344/2 to then give -0.00960 cfs. This subtraction and the partition of the gravity effects on baseflow from the effects of plant transpiration was possible because the night rate due to gravity flow and night evaporation would also occur during day-time baseflow. Evaporation would increase however for days because days are warmer than nights. The day slope constants of table 1 therefore are higher than the night rate and result in the day-time evapotranspiration (day - night) or about double the night baseflow rate (Table 2).

Table 2. Means of night and day recession rates (cfs) for data reported each hour over 12 hour periods. (from Table 1)

night	-0.00344
day	-0.01132
day - night	-0.00788

From the exponential relation $Q_t = Q_0 * e^{-(Q_0/K_t) * t}$ then by the definition of recession coefficients K let $1/K_t$ be the night-time recession constant obtained from

Of particular interest is the estimation of the second growth slope constant. The Stanley Creek $K = 0.84$ employing the diurnal variation approach described in Methods agrees with the average of the samples from WA#1 of AEF daily observations or 0.83 (Table 4) but is lower than $K = .84$ for the other estimate (Table 4). A compromise of $K = .83$ is employed in the analysis through the remainder of the paper. Also relatively good agreement between the two watersheds for baseline is seen (Table 3 and 4). The high rate of decrease in the slope constants of second growth in WA#1 judging from figure 2 with slow declining flat appearance of the late summer fall was unexpected but a logarithmic transformation showed frequent and most commonly sharp individual downward jogs in baseflow of a few days duration.

Table 4. Andrews Experimental Forest mean recession coefficients K (slope constants = $-\ln(I/K)$ for 1953-1961 (baseline) and 1970-1990 (second growth))

Period	Sample	Number of slopes	maximum K	minimum K	mean slope constants	std. error of mean K	K
baseflow	1	38	0.937	0.727	-0.098	0.051	0.90
	2	39	0.965	0.724	-0.109	0.053	0.90
second growth	1	36	0.941	0.568	-0.195	0.096	0.82
	2	36	0.968	0.622	-0.172	0.078	0.84

Comparison of slope constants (Table 3) with a slope constant for the cleared forest regime of -0.051 and a recession coefficient K of 0.95 (Myren, 1991, unpublished) show that the demand of vegetation for water is least in cleared forest with the demand doubling for Old Growth forest (-0.117/-0.051 = 2), and again increasing by 1.7 (-0.198/-0.117) for second growth forest. Is this evidence of basic, important, phenomena? If these data are accurate one might then entertain the idea that vegetation adapts to the moisture regimes in such a way that there are indeed regimes for plant growth states or succession phases dependent upon soil moisture. Species succession occurs rapidly following clearing and as succession slows as maturity is reached the demand for water stabilizes to the steady state and the local shifting mosaic of the all age distribution described for an eastern mixed hardwood forest by Bormann *et al.* (1979) may be reached.

Evapotranspiration in second growth forests.

The studies at the Andrews WA#1 reported by Hicks *et al.* (1991) showed the evapotranspiration difference for August between the baseline 1953-1961 period with $K = .90$ and $K = .83$ for the 1970-1988 period of second growth substituted into FEE gives 0.087 mm/day. FEE predicts such a value for WA#1 and for the Stanley Creek drainage. For WA#1 with $K = .83$ and $K = .90$ with initial baseflows N_0 between 0.27 cfs ($a = -1.3$) and 0.11 cfs ($a = -2.25$) from figure 4 FEE predicts the range between 0.048 mm/day and 0.119 mm/day which includes 0.084 mm/day; for Stanley Creek the recession coefficient of $K = .89$ and $K = .83$, $N_0 = 32$ cfs, $a = -955$ then FEE predicts 0.084 mm/day. The same result is obtained by assuming 40.5% is all the drainage to be cut and scaling initial baseflow N_0 to 42.4 percent of initial baseflow $N_0 = 30.56$ cfs or $N_0 = 12.96$ cfs (Table 5)

$$1/e^{0.0084 \cdot 24} = .921$$

The 24 hour coefficient for gravity flow would be $^{24}K_m$ or

$$1/e^{0.0084 \cdot 24} = .921 \quad (3)$$

The coefficient for evapotranspiration $^{12}K_d$ would respectively be therefore,

$$1/e^{0.0080 \cdot 12} = .909 \quad (4)$$

The overall coefficient can therefore be expressed as the product of two coefficients,

$$K_{ed} = ^{24}K_m \cdot ^{12}K_d = .838 \quad (5)$$

This value of $K = .838$ is greater than the average recession coefficient $K = 0.823$ of table 1 (column 8). Table 3 shows the recession coefficients, K , and their standard error from the average of the ten slope constants derived from the regression analysis of hourly baseflows over 24 hours (6/13, 8/25, 8/31 and 9/2), over 48 hours (6/4-6/5, 7/2-8/4, and for 72 hours, periods (8/5-8/7 and 8/8-8/10).

Daily slope constants from hourly average streamflows.

Estimates of Old Growth slope constants were from only two years of data (1965-1966) before commencement of logging in 1967. The summer of 1965 hosted major declines in the summer low flows, approaching but not comparable with the 1993 low flows. These data comprised the data base for the least square regression analysis. Identification of segments of the baseflows of the 1963 hydrograph and employing least square regression analysis described in Methods gave estimates of individual slope constants (listed in Appendix 1). The average of six slope constants was -0.117 or $K = .89$ (Table 3).

Table 3. Mean recession constants K of cleared forest, Old Growth and second growth forest of Stanley Creek drainage.

Regime	number & type of data points	Number of slope constants	slope constant	standard error of mean K	K
Old Growth 1965	3 days	6	-0.117	0.005	0.89
second growth 1993	12 to 72 hours	10	-0.186	0.014	0.82

Similar methods employed for Stanley Creek to find slope constants from daily stream flow were applied to observations from WA#1 of the AEF for table 4.

	Sid. error of monthly yields				C.I. includes 0.087	Calculations from std. error, table 1.	"
	Recession coefficients	1.0	17		0.101921 ¹⁰	FEE	"
	"	1.0	0.11		"	"	This paper.
	"	1.0	0.27		"	"	"
Staney Cr. AK	Recession coefficients	0.955	30.7		0.00076923 ¹¹	FEE	This paper.
		0.405	13.7		0.00081290 ¹²	"	"

For WA#1 of AEF, although the lower evapotranspiration difference (Table 5) calculated from monthly yields of Hicks *et al.* (1991) compared to higher evapotranspiration difference of the Staney Creek drainage appear consistent and share the same hydrological characteristics. The stream flows of WA#1 of AEF before logging and for the 1970-1990 second growth period (Figure 4) show (1) the slopes of baseline are less than second growth as reported in table 4 and (2) great coherence of the baseflow variation compared to the second growth. These differences demonstrate the problems and the variability which hide subtle but critical effects of logging and road building disturbance on baseflow.

Notwithstanding the argument of FEE there is another way of expressing the long term effect of cutting on baseflows employing figure 4. Drawing by eye straight lines on figure 4 approximating the slopes of the baseline and the 1970 post-logging observations we see the slopes are approximately -0.0175 and -0.037 respectively. These slopes uncorrected for augmentation violate the basic assumption that the rate of decline of flow is a simple function of the rate

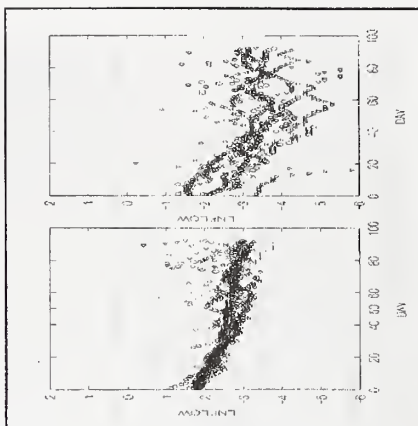


Figure 4. Streamflow (cfs in logarithms) of WA#1 of Andrews Experimental Forest for several July-September periods for baseline (left) and after 1970 post logging observations (right).

Table 1 of Hicks *et al.*, will show however for August on WA#1 the evapotranspiration difference is 0.032 mm/day² not the 0.084 mm/day to 0.089 mm/day of these data (Table 5). The lower evapotranspiration rate difference is an average over the entire month of August reduction of evapotranspiration due to augmentation and reduction of baseflow and periods when evapotranspiration rates are high, augmentation is absent and only baseflow is present. Such errors are shown in the standard error of the mean - 0.37 l/s/Km² which for August on WA#1 was 0.10 (units converted from area units in depths of water in mm per unit area to volume units in liters/s/Km²). The presents of these higher rates of 0.087 mm/day identified in the analysis of the hydrographs and determination of the recession coefficients reported in table 4 can be demonstrated that they are included in the ranges of evapotranspiration rates expressed in the standard error of 0.10 from Hicks *et al.*. For WA#1 the standard error of an observation, where n is the number of August's in the 1970-1988 period or n = 19, then

$$s_{\text{base}} = 0.10, s_{\text{base}} = s/\sqrt{n}, s = s_{\text{base}} * \sqrt{n} = 4.36, \text{ and } s^2 = 19$$

With 31 days in August then the number of observations in n is 31 and the standard error of the difference appears to be (See Steel and Torrie p. 76),

$$s_d = \sqrt{(n * s^2) / \text{number obs. in } n} = \sqrt{(19 * 0.19/31)} = 0.341$$

The 95% confidence interval (C.I.) around - 0.37 l/s/Km² is - 0.37 ± t_{0.05} * s_d or ± 1.96 * s_d which is 0 > - 0.37 > - 1.037 l/s/Km². Converting - 1.037 to area-mm/month is - 2.77 area-mm/month or 0.0896 area-mm/day (Table 5) and dropping the minus sign of convenience. So here = 0.088 mm/day is again. It appears within the C.I. because observations of 0.087 and other values contribute to the standard error of 0.10. As the analysis of the WA#1 hydrographs reported in table 4 of recession coefficients substituted into FEE also resulted in 0.087 mm/day² of table 5 because uncorrected evapotranspiration is greater than its mean value given in table 1 of Hicks *et al.*, of 0.032 mm/day.

Table 5. Evapotranspiration rate differences (area-mm/day) between Old Growth and second growth forest for August at WA#1 of Andrews Experimental Forest, Oregon and during the summer growing season at Staney Creek, Alaska.

Location	Source of Observations	fr	baseflow cfs	e converts streamflow in cfs to area-mm/day	evapotranspiration diff. in mm/day	Method	Source and/or data.
Andrews WA#1, OR	From average yields	-	-	-	0.032	Calculated from table 1	Hicks, <i>et al.</i> , (1991).

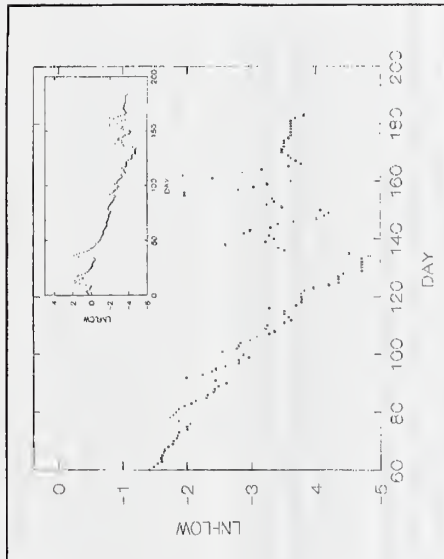


Figure 3 Streamflow (cfs) for Watershed #1 of Andrews Experimental Forest, Oregon summer 1979 (U.S. forest Service weir record).

monthly yields of table 5 it was 0.087 mm/day (See also Endnote # 8.)

A limit to the rate of baseflow decline expressed as a recession coefficient $K = 0.83$ may be demonstrated in two ways. The first way is determination of the recession coefficients between 0.82 and 0.84 from direct diurnal variation analysis of hourly Stanley Creek baseflows. These estimates are more precise estimate because 12

observations occur for each estimate of table 1 and are free of water losses from nighttime drainage and evaporation compared to the regression analysis of usually three daily averages and the low level night flow and export of water by gravity is not excluded from the daily evapotranspiration. The second way employs FEE with $\text{evaptr} = 0.085 \text{ mm/day}$ from WA#1 in which the recession coefficients and initial baseflow for the Old Growth forest of the Stanley Creek drainage are respectively $K = 0.89$ and $N_0 = 32 \text{ cfs}$ or similarly for AEF WA#1 drainage $K = .90$ and N_0 in the range 0.11 cfs and 0.29 cfs substituted then FEE gives recession coefficients $K = .82$ and $K = .84$ which are near values of tables 3 and 4 for each watershed respectively

Other evidence suggested physiological limits. For example, the slowing of recession over time as exhibited in the complex exponential of Federer (1973) in which the second term of the complex exponential slows the rate of baseflow decrease compared to the first term (check this) and is perhaps a result of plant adaptations to reduced availability of water during droughts physically shutting down evapotranspiration during the growing season. The complex exponential of Federer (1973) of two different rates may suggest two different physical or physiological processes at work on the watershed. The irregular starts and stops of downward trend in baseflow especially on AEF WA#1 (Figure 5) compared to Stanley Creek (Figure 1) may suggest temporary resistance and relaxation to water loss by plants from the evaporative demand. Federer believes at the Hubbard Brook Experimental Forest that water from the entire drainage contributes to baseflow (Hewlett and Hibbert, 1965). Such slow contributions over all of the basin would replenish portions of the drainage under intense evapotranspiration due to disturbance reduce and modify the simple exponential decline

e^s and hence expressed as recession coefficients 0.98 and 0.96 respectively clearly underestimate the rate of decline in baseflow given the table 4 and table 5 (See, "Reflections on recession coefficient 0.83" preceding the DISCUSSION). Nevertheless, such a rate of decline for baseflow of -0.0175 is nearly half the rate of decline of the post 1970 period of -0.037. If it is assumed that from figure 4 the active period of decline is in the first 50 days after which augmentation and higher variability takes over and that the initial baseflows N_0 are 0.135 cfs then after 50 days the baseflows diminish to 0.056 cfs and 0.021 cfs or shown in figure 4 in natural logarithms as -2.90 and -3.30. The amount of water available for aquatic habitat after 50 days for this small watershed in the theoretical example is halved due to effects of cutting.

Support of Model 1 from Data of the Hubbard Brook Experimental Forest

Substituting the complex exponential reported by Federer (1973) on Watershed #3 at Hubbard Brook Experimental Forest New Hampshire for the period without evapotranspiration from October 16 to November 30 baseflow for the transpiration free period of $Q_1 = 0.35[e^{(-1.75t)} + e^{(-0.16t)}]$ for $f_1(z)$ and for baseflow of $Q_2 = 0.03[e^{(-1.75t)} + e^{(-3.5t)}]$ for $f_2(z)$ for the period with evapotranspiration for the period July 1 to September 30 then the integration of $[f_1(z) - f_2(z)]$ of FEE predicted the evapotranspiration difference is 2.14 mm/day over 4.9 days compared favorably to Federer's integration (Table 2, p. 1603)¹⁹ over 5 days for the average evapotranspiration difference of 1.88 mm/day. The difference between the two estimates of 2.14 mm/day and 1.88 mm/day is not clear

Reflections on recession coefficient 0.83

Waring and Franklin (1979) observe evaporative demand usually exceeds the critical limits of plants during the summer growing season to move water to the atmosphere through photosynthesis in forests of the Pacific Northwest. Summer season water deficits occur in both Sitka spruce coastal rainforest and in more arid inland Douglas fir forests. Simulated photosynthesis of 1-m to 2-m tall *Pseudotsuga menziesii* growth in a coastal Sitka spruce forest and a Douglas fir in Cascade Mountains of Oregon of larger water deficits for the inland forest compared to the coastal spruce forest are shown in Waring and Franklin's figure 3. The simplest explanation of an apparent limit on rate of flow decrease not exceeding the recession coefficient of $K \approx 0.83$ may be simply a physiological limit on the rate of evapotranspiration in fast growing second growth. The difference in evapotranspiration between Old Growth forest and second growth forests is apparently definitive from the weir observations of WA#1 by direct measurement of yields (Hicks *et al.*, Table 2). For example, for August

The most troublesome aspect of baseflow analysis particularly of AEF WA#1 is the irregularity of the baseflow decreases on the hydrograph during the summer growing season (Figure 5) with short term interruptions in baseflow decrease which require identification of when baseflows occur and terminate as the baseflows decline during the summer season drought (Figure 2 and Figure 5) with the water deficit. This potential source of error in defining rates of baseflow decline is greater in AEF than at Stacey Creek where frequent augmentation spikes (Figure 1) identify possible baseflows compared to the infrequent spikes of WA#1 with small interruptions and plateaus and small upward "bumps" (Figure 2 and Figure 5), not the incisive upward spike of well defined augmentation separating possible baseflows of Stacey Creek flows. The baseflows of shorter duration and more clearly defined between the more frequent spikes of augmentation for Stacey Creek compared to the long summer drought are the defining baseflow characteristics of AEF compared to the constant rainforest. The larger standard errors = 0.078 and 0.096 from table 4 of the mean of $K = 0.83$ from daily average flows suggest the lower the standard error = 0.014 for the Stacey Creek hourly observations indicated the superior analysis of diurnal variation for the recession coefficients determined by the method (Table 1).

Discussion

The important implications of this paper is that breach which appears between the Andrews Experiment studies of Hicks *et al.*, (1991) and Alaskan studies and understanding suggested by Meehan *et al.*, (1969) appear no longer supportable. The laws that operate on the AEF operate on Stacey Creek drainage and in temperate rain forests are the same. Differences are not in kind only in degree. The agreement between the analysis of diurnal baseflows and daily baseflow averages, two relatively divergent methods for second growth forests with the Andrews Experimental Forest located at elevation on the western slopes of the Cascades (Table 4) compared to the Stacey Creek drainage within the temperate rain forest of Alexander Archipelago and draining to sea level (Table 3) and arrive at similar recession coefficients, $K = 0.83$ for second growth and $K = 0.89$ lends credence to the application of methods employed in this study. The different geomorphies, soil type and depth, vegetation, temperature, precipitation, biology and climate characteristics between these forests could only be described as extremely disparate yet both systems appear to share the same laws that govern the removal of water from the soil.

Federer (1973) reports in small mountainous watersheds like those at Hubbard Brook (1) ground water appears to be very limited except for local perched water tables during snow melt and the recessions discussed in his paper do not originate in groundwater (2) prolonged recession in the absence of transpiration is probably due to slow drainage of unsaturated soil (as described by Hewett and Hibbert, 1963), (3) the recession is thus drainage interflow rather than groundwater flow and the whole watershed contributes to this prolonged drainage.

Rothacher, J. (1971) reported after clearing and 4 years after burning riparian alder was already well established causing pronounced diurnal fluctuation due to heavy water use during the day. Stacey Creek is not usually known for extensive alder succession, though exceptions have occurred, following cutting and except where cutting is to the stream bank. It is unlikely that the 100 foot buffers and their extension will in many

cases prevent alder succession especially on the second class and high order streams. The evidence of the diurnal variation at Stacey Creek is probably evidence of such phenomena. These data also provided an interesting insight into the relationship of gravity drainage of baseflow and evidence of the disappearance of the variation above 16 cfs. These effects of evapotranspiration have not been reported in the literature to the writers knowledge, and certainly not in the Alaskan literature nor any knowledge of them as expressed in the different guide-lines, forest standards, and other considerations and regulation of forest cutting on the Tongass.

The methods employed at Andrews Experimental Forest include analysis of variance of data averaged over months lead to tests of monthly yield differences between the before, during and after logging periods and report that "... yields for 1979-1988 were not significantly different from the 1953-1962 period of prelogging calibration for combinations of July-September yields..." (p. 222). These averages are correct but do not report the details and events which lead to fish mortality. Such "averages" over long periods are clearly insensitive to the details of the low flow events such as, for example, for the initial baseflows N_0 commencing for WA#1 at 0.37 cfs or less at the tail of the baseflow distribution and flows less than one percent of the summer flow (see Figure 2). Such "tails" are critically important though lost in averages. Furthermore the obvious breakdown of the coherence of baseflow variation of the post logging period (Figure 4) compared to the baseflow period clearly must have pronounced effects the ability of rearing and resident organisms to survive.

Methods to determine baseflow characteristics are variable but the may be relatively precise. For example, from diurnal variation the baseflow change measured by hour supplies 24 observations and supplanting one single daily observation of an average over the 24 hours. The disappearance of diurnal variation at flows greater than 16 cfs on the Stacey Creek drainage suggests drainage flow is mixing with flow that supplies water for evapotranspiration and the disappearance of remanent flows from other aquifers and bank storage and perhaps groundwater is the source of streamflow below 16 cfs. Daily compared to hourly observations are less precise. For example, the initial baseflow of $N_0 = 32$ cfs has appeared to serve adequately in the baseflow description. However, Riggs (1964) warns about errors in baseflow estimates especially if bank storage is part of the low flow regime. Bank storage is probably observed and may occur contemporaneously with baseflow in Stacey Creek and perhaps indicate the initial baseflow to $N_0 = 32$ cfs.

If it were not for the fortuitous event at Stacey Creek of an extreme low flow occurring by chance in one of the two years of data collection in the 1965-1966 baseline period and its recession coefficient $K = .89$ then the comparison with the second growth coefficient of $K_r = 0.83$ would not have been possible nor perhaps more significantly that the Old Growth forest's of WA#1 of AEF and Stacey Creek drainages prior to cutting the recession coefficients were the same within a small error of variation. The lack of many field observations in the baseline pre-cutting period at Stacey Creek is the weakest part of the present study.

The important implications of this paper is that management of the fish resources on the Tongass National Forest is not being done right. No publications nor science has evolved out of Alaskan hydrology in the past 3 decades that address the cumulative impact of alterations in the long term baseflow regime following forest clearing. The Oregon study of Hicks *et al.*, (1991) study in Oregon has stood almost as a curiosity and an isolated monument with little relevance to management of water resources in relation to fish in Alaska. Bringing the

water by gravity flow and low level evaporation.

(5) A plot of the WA#1 data comparing the baseline Old Growth forest (1953 - 1961) observations with the second growth (1970-1984) observations demonstrated higher recession rates of second growth compared to the baseline. Furthermore, the coherence and organization was high and variation was low for the baseline baseline of Old Growth forest compared to the second growth (Figure 4). It would appear unlikely that the high degree of coherence and structure of the baseflows of the baseline period of the Old Growth forest would be expected to return to second growth forest until such forest begin to reach maturity of considerable time has elapsed.

(6) Only the summer of 1965 provided adequate baseflow data prior cutting of the Stanley Creek drainage compared to the large amount of summer season baseflow data available from 1953 to 1960 for H. J. Andrews WA#1 prior to cutting. For the second growth regime the amount of data available to Stanley Creek drainage was small compared to WA# 1 but again these observations complimented each other with recession coefficients of 0.83 for Stanley Creek drainage and 0.82 and 0.84 for WA#1.

(7) The 0.83 recession coefficient appears to be a maximum rate baseflows for second growth forest may decline is supported on the two watersheds. Also baseflows of 0.89 to 0.90 appear to be a characteristic of rates of flow decline on watersheds supporting Old Growth forest. The well developed soil saturation deficits reported for WA#1 showed the mean recession coefficient between .82 and .84 which compared favorably with Stanley Creek with short term summer saturation deficit due to intermittent precipitation.

(8) The smaller evapotranspiration rates determined from average yields of WA#1 of AEF are inadequate to address the critical lower limits of baseflows affecting aquatic habitat during the summer growing season and high evapotranspiration in second growth forests.

file_evap117

Endnotes

1. Recession coefficients of the baseflow and post 1970 logging period of the AEF WA#1 from daily streamflow observations were reanalyzed in the end of September 1997 (Sample 2). The reanalysis gave 0.897 compared to the first analysis of 0.914 for the baseline period and 0.842 compared to 0.823 for the post-1970 period.
2. Data provided of the hourly record from the US Geological Survey recorder at Stanley Creek by the USGS office in Juneau, Alaska.
3. Myron, R. 1991 (unpublished). *Predicting streamflow in forests during droughts due to changes in evapotranspiration*. Watershed '91, A Forest Service symposium held in Juneau, April 16 - 17, 1991. Only an abstract, without the text requested by the author, appears in the symposium proceedings.
4. For example, the 6/4-6/5 sample contain's hourly baseflow observations (a total of 48 observations) with the slope constants estimating from regression analysis the relation $y = b * e^{ax}$, recession coefficients over

Oregon and Alaskan experiences together shows that long term effects can no longer be neglected. The institutional effort in Alaska has been directed at the relative short term effects of increases in flow which follow logging in the short period of the cleared forest have only lead to the earlier 28 % to 35 % rules and 15 years of no cutting and more recently to and more stringent rule of 20 % cut and 30 years between cutting. These effects as the longer term effects--initiated forty three years ago on the Andrews Experimental Forest and thirty one years ago in the Stanley Creek drainage, begin. The Forest Service must begin to address the long-term of cutting on baseflows.

Summary and Conclusions

(1) A theory is advanced from common hydrological principles that a solution to a fundamental evapotranspiration relation between different baseflow recessions and evapotranspiration rates may be found employing an iteration procedure. The evapotranspiration relation applies to both short term effects of disturbance such as forest clearing and the long term evapotranspiration relations as second growth forest develop. The fundamental evapotranspiration equation (FEE) was verified by application of the recession equations from two independent studies as follows:

- a. Stanley Creek calculation from the fundamental equation gave a comparable evapotranspiration rate difference to WA#1 of 0.084 mm/day.
- b. For the H. J. Andrews Experimental Forest Watershed #1, Oregon showed the two estimates, 0.048 and 0.119 bracket the evapotranspiration difference of 0.087 mm/day for WA# 1 for the August periods of the 1953-1961 baseline and the second growth period 1970-1988 (See endnote 7 for WA# 1 calculations.).
- c. The observations of Federer (1973) from the 42.3 hectare Watershed 3 of the Hubbard Brook Experimental Forest, New Hampshire showed the difference between the two recessions then $evap_{tr} = 2.14$ area-mm/day for $t^* = 4.9$ days for FEE. Federer (1973) reported in table 6 the difference between the two recessions was 1.88 mm/day for the first five days and a difference of twelve percent.

(2) Recession coefficients for the Stanley Creek drainage baseline or Old Growth forest of 0.89 employing daily baseflow observations in the period 1965-1966 compared favorably to recession coefficients of 0.90 from two separate estimates ($n = 38$, and $n = 39$) from daily of baseflow observation for 1953-1961 for the Old Growth forest of the Andrews WA#1 (Table 4).

(3) Recession coefficients for the second growth forest of 0.83 ($n = 10$) for 1993 summer baseflows compared favorably to two estimates of 0.82 and 0.84 ($n = 36$ and $n = 36$) over the period 1970-1984 for the Andrews WA#1.

(4) Regression analysis of the diurnal variation (Figure 3) of Stanley Creek showed the instantaneous rates of baseflow decrease from the export of water by daytime evapotranspiration was double the night time export of

1-7

periods of 12, 24 and 48 hours.

5. The recession coefficients contain the recession rates due to both evapotranspiration and export of soil drainage waters. Implicit in the fundamental evapotranspiration equation (1) is that the export of drainage waters continues at the same rate in Old Growth forest and the second growth forest and the difference in baseflows between the two forest states is due to a higher evapotranspiration rate in the second growth forest computed to the Old Growth forest. The computation of this difference is accomplished by first expressing the difference in amount of water lost by drainage and evapotranspiration per amount of area of the watershed and therefore expressing it in units as the amount of water lost in a given time contained in the volume of the surface area of the watershed to a specified height. The unit expressed in the paper is the height in millimeters per square millimeter lost per day. Because the waters lost by natural drainage is the same for the Old Growth forest and the second growth forest the difference in height is due to the difference in evapotranspiration between the two states of the forest. The right side of the equation of the fundamental evapotranspiration model (1) gives the details of how this difference the evapotranspiration is computed.

6. When baseflow is measured in cfs, area to be cut in number of acres and evapotranspiration is expressed in area-mm/day then $c = 12^3 \cdot 2^2 \cdot 56^3 \cdot 3 \cdot 10^3 \cdot 24 \cdot 60^2 / ((\text{Amt. of area cu in acres} / 640 \text{ acres}) \cdot 2)$

7. From table 1 for August in WA#1 (4mm - 5mm)/31 = 0.032 mm/day.

8. Steel, R.D. and J.H. Torrie. 1960. *Principles and Procedures of Statistics*. McGraw-Hill, N.Y. 481p. p. 76.

9. From table 2 of Hicks et al., for August the difference in mean observed water yield (mm) between the period 1953-1965 and 1970-1988 is 5.7 (mm) - 3.0 (mm) = 2.7 (mm). There are 96 hectares in AEF Watershed #1 or $96 \cdot 10,000 \cdot 100^2 \cdot 10^6 \text{ sq. mm} = 9.6 \cdot 10^8 \text{ sq. mm}$ in WA#1. Multiplying this result by the difference 2.7 mm gives the number of cubic mm lost to the atmosphere by evapotranspiration per month. Dividing the total number of cubic mm lost per month passing through the surface area of WA#1 and by 31 (days) gives the area-mm/day evapotranspiration difference or $2.7 / ((96 \cdot 10^8 / 96 \cdot 10^8 \cdot 31) = 0.087 \text{ area-mm/day}$.

10. $c = (12^3 \cdot 2^2 \cdot 56^3 \cdot 60) / ((96 \text{ acres} \cdot 10000 \cdot 100^2 \cdot 100) \cdot 2 \cdot 56^2) = 0.1019215$

11. $c = ((12^3 \cdot 2^2 \cdot 56^3 \cdot 60) / ((30942 / 640) \cdot 5280 \cdot 2 \cdot 12^2)) = .00076923$. 30,942 is the total amount of acres in forest that is to be cut. the 30942 statistic was obtained by Steve Kessler summing the amounts of planned cutting in the VCU's of the Slaney Creek drainage.

12. $c = ((12^3 \cdot 2^2 \cdot 56^3 \cdot 60) / ((13129 / 640) \cdot 5280 \cdot 2 \cdot 12^2)) = .0018129$. 13,124 is the total amount of acres in forest that is to be cut when it now is 1. The 13,124 statistic was obtained by Steve Kessler summing the amounts of planned cutting in the VCUs of the Slaney Creek drainage.

13. Table 6. Daily Estimated of Streamflow in Millimeters from FEE for Autumn and Summer recessions (4a and 4b) of Federer (1973, p. 1603).

Day	Oct. 16 to Nov. 30	July 1 to Sept. 15	Differ- -ence
-----	-----------------------	-----------------------	------------------

1	12.7	11.3	1.4
2	4.5	2.3	2.2
3	2.7	0.6	2.1
4	2.1	0.2	1.9
5	1.8	0.2	1.6
6	1.5	0.1	1.4
7	1.2	0.1	1.1
10	0.8	0.0	0.8

An initial flow of 2.67 l ha⁻¹ sec⁻¹ is assumed.

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Appendix I.

Table I-1. Slope Constants and Recession Coefficients K for Stanley Creek, Alaska 1965.


Date	slope constants	std error of slope const	K
August 11-14	-0.104	0.017	0.901
August 20-23	-0.117	0.012	0.889
July 16-19	-0.100	0.022	0.905

Mr. James Franzel, District Ranger
or Lisa Winn, Team Leader
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Correction to Finger Mountain Timber Sale DEIS

Gentlemen or Madam:

Figure 1 of the DEIS is not complete with (a) designating the Old Growth "steady state" forest and (b) the second growth forests. Also the poast paragraph of page 2 has been corrected. Sorry about this. It is hard enough without extra mistakes.

Sincerely,

Richard T. Myren
3320 Fritz Cove Road
Juneau, AK 99801

3/11/00
Enclosures

August 3-6	-0.136	0.011	0.873
September 8-11	-0.0112	0.003	0.894
September 24-27	-0.0126	0.040	0.882

R. T. Myren
3320 Fritz Cove Road
Juneau, Ak 99801
789-9165

SAMUEL E. & JOAN M. MCBEEN

PO Box 23

Tenakee Springs, AK 99841

February 21, 2000

Jim Franzel, District Ranger

Attn: Finger Mountain EIS

USDA Forest Service

204 Signaka Way

Sitka, AK 99835

Dear Mr. Franzel:

We have a few comments we would like to make regarding the Finger Mountain Timber Sale.

1. First of all, we want to assure you that the Forest Service's vision of the "desired future condition" of the proposed project area is not one that we or the rest of the residents of Tenakee share. 11-2
2. Clear-cuts, LTFs, logging roads, logging camps and the associated noise, and helicopter and marine traffic all have severe negative effects on local tourism, guided sport fishing and ecotourism businesses. The DEIS fails to adequately address this problem. Contrary to what the Forest Service would have us believe, the effects of the clear-cuts, roads and LTFs are not short term but will be causing us harm for decades. The Forest Service's assertion that "In all alternatives, the visual impacts would lose their stark contrasts with the surrounding forest within five years of completion, reducing the visual impact to Tenakee Springs and Tenakee Inlet commercial uses adjacent to the project area." is pure fantasy at best or an outright deception at worst. Scenic damage from clear-cuts is not lessened in five years. Clear-cuts at the mouth of Crab Bay are still vividly apparent after 23 years, as are clear-cuts of various ages, all over the entire region. The Forest Service's contention that guiding and sightseeing activities "would reestablish quickly after harvesting is completed" is ludicrous and without any basis in fact. The fact is, people will not pay large sums of money to be taken to a devastated area to sight-see and fish. The damage you are doing to our economy is incalculable. 3-2
3. The huge clear-cuts proposed for South Crab Bay (VCU 233) are not just visible from "a small boat route in Tenakee Inlet and an anchorage in Crab Bay". They are right outside our window (in our front yard, if you will) and are a major component of our view from Tenakee Springs. In both public meetings and in the DEIS, the Forest Service claims to be sensitive to the concerns of local citizens and businesses about the scenic qualities that are so important to us. In view of this, the decision to include these units in this sale is simply astounding. There is no way to mitigate the continued destruction of the scenic qualities that are so essential to our sense of place and 3-2

well being as well as to our economy. The impacts on the view from our home are something we would have to live with for the rest of our lives.

4. While guiding on National Forest lands in the Crab Bay area, the Forest Service agree totally with that philosophy. Now however, the Forest wants to totally destroy 936 acres of old growth forest and build 21 miles of new roads in the very same area. The inconsistencies in Forest Service policies are almost beyond comprehension. By this, we do not mean to imply that the standards for guiding should be relaxed. Quite the contrary, we believe that the Forest Service should implement similar standards for the timber industry.
5. For all of us here in Tenakee, this sale is a lose - lose situation. We have everything to lose and nothing to gain. Our economy will suffer, our wildlife will suffer, our scenic qualities will be further degraded. Even if there were some economic advantages for us, we would gladly forego any of it in order to preserve the qualities that make this a wonderful place to live, work and to visit. 7-4
6. The DEIS fails to adequately acknowledge and evaluate the cumulative effects of continued clear-cutting in Tenakee Inlet. The Forest Service gives lip service to the topic but has never adequately addressed the problem. Either we have not been successful in communicating the gravity of the situation or the Forest Service has chosen to ignore our concerns. Given the sheer volume of testimony the people of Tenakee have given in letters, public hearings, comments on EISs and through litigation, we suspect the latter. The Forest Service steadfastly persists in underestimating and understating or ignoring the severity of the area wide cumulative effects of large scale clear-cut logging on wildlife and the socioeconomic spectrum. The Forest Service's assertion that "no significant restrictions on any subsistence resource from past, current or reasonably foreseeable future actions would occur in any alternative" is absurd. Anyone should be able to understand that this sale will indeed have a negative impact on wildlife (and on deer in particular) and consequently on sport and subsistence harvests. In past EISs, (i.e. Indian River) the Forest Service has stated that "there is a significant possibility of a significant restriction for subsistence use of deer". Due to the cumulative effects of more and more clear-cuts and more and more habitat loss, the "significant possibility of significant restriction for subsistence use of deer" becomes more and more SIGNIFICANT with each and every clear-cut. In the Indian River EIS the Forest Service conceded that there would be significant harm to deer and subsistence hunting but chose to ignore the fact and mow it down anyway. The trend has clearly not changed. 2-1
7. The Forest Service is negligent and in violation of NEPA in failing to adequately evaluate the positive economic effects of Alternative "A" to the tourism, guided fishing and hunting and ecotourism industries. The economic efficiency analysis is defective in that it fails to accurately analyze the NEI economic gains or losses to the region as a result of each of the alternatives. Alternative "A" would allow for continued growth in the tourism and guiding industries and the action alternatives would tend to inhibit growth of these industries. Over the long term, it is likely that 7-4

Alternative "A" would actually be of greater economic benefit to the region than any of the action alternatives.

8. In no case should the sensitive area in the vicinity of Little Seal Bay (VCU 230) be entered. This area is very important deer habitat and is important to local sport and subsistence hunters. In addition, this area is part of a larger and currently unroaded area that is under consideration for protection from commercial logging in the Forest Service's proposed Roadless Area Policy. Until said policy is finalized, this area should not even be considered for logging.

9. Contrary to the DEIS, Trumpeter Swans have indeed been observed in Crab Bay and at In-between Creek. We have personally observed swans at both of these locations on many occasions (nearly every spring and fall in those areas) and at most of the other tidal flats in Tenakee Inlet as well.

10. Contrary to the DEIS, all of Tenakee Inlet is an important feeding area for Humpback Whales. Concentrations of up to 40 Humpback Whales regularly use the inlet for intensive feeding on herring and krill from August through November.

11. While reading through the voluminous, mind numbing reams of jargon and acronyms in an EIS, we are nearly always left with the feeling that we are wading through (drowning in?) oceans of bureaucratic double-speak. The issues of concern you identify are usually valid but at the end of the discussion, your conclusions are generally the same, i.e. *no adverse effects are anticipated* (emphasis mine). All through the DEIS the negative consequences of the proposed action alternatives are pointed out. Wildlife habitat will be lost, scenic quality will be degraded, primitive non-motorized opportunities will be lost, the local economy would be harmed, herring spawning areas will be impacted, ... but you still intend to do it anyway. Public opinion is overwhelmingly in opposition to this sale, but you still intend to do it anyway.

12. Over the years, Tenakee Inlet has been heavily impacted by timber sales and clear-cutting over its entire length. We have born much of the brunt of supplying huge volumes of old growth timber to the now defunct pulp mills. Our environment, our way of life and our economy have been severely impacted. In short, it is time to give this area a break! The only alternative in the DEIS that we can support is Alternative "A", **NO ACTION!!!!**

Sincerely,

Samuel E. McBeen

Samuel E. McBeen

Joan M. McBeen

Joan M. McBeen

To: James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

In regards to the proposed Finger Mountain timber sale:

As a frequent visitor to the area and relative of a Tenakee Springs resident I am writing this letter to voice my strong opposition to all further clear-cut sales surrounding the Tenakee Inlet area

First of all I want to start by letting you know that I have a considerable amount experience in the logging industry in that I have spent over twelve years of my life logging all over the Pacific north-west, from northern California to Idaho, so I am not just another "tree hugger" writing to oppose every timber sale that I hear of.

Tenakee Springs is a very beautiful and special location of Alaska. There are a great many interests to enjoy, with a greater number of people visiting the area all the time. From guided fishing and hunting trips to hiking, whale watching, and (not the least of which) just plain site seeing, the allure of Tenakee Inlet has grown steadily.

I believe strongly that proceeding with any clear-cutting in this area would have a detrimental effect, not only on the tourism of the area, but to create even greater destruction of wildlife habitat and damage to prime spawning streams is totally unacceptable!

Furthermore, The proposed timber sales in the areas indicated: Crab Bay, In-between Creek, and Little Seal Bay, (with the possibility of further sales at Indian River, False Island, Eight Fathom, and Saook,) tears at the very heart of Tenakee Springs!

The effects of log dumps, logging camps, and increased marine and helicopter traffic to tourists, the environment and the residents themselves (all of whom oppose these sales) is also unacceptable.

Add to this the questionable need to further scar this area of forest only to ship the majority of our natural resources overseas, it is clear that clear-cutting in the Tenakee Inlet cannot continue.

Please review your proposal with all the facts in mind, and I think you will realize that these sales are not worth the negative effects they would have on the area and the community itself.

Thankyou

Tim McBeen

Tim McBeen
7323 Belita Ave.
Richbert Park Ca. 94928

cc. Chichagof Conservation Council
Box 621
Tenakee Springs AK 99841



3723 Holiday Drive
Olympia, WA 98501
360-570-9309 (t)
360-570-9310 (f)
nlawrence@nrdc.org

February 28, 2000

James Franzel
District Ranger
US Forest Service
204 Signaka Way
Sitka, AK 99835

RE: Finger Mountain DEIS

Dear Mr. Franzel:

Please note the interest of the Natural Resources Defense Council in the Finger Mountain Timber Sale Project, and provide us with copies of any subsequent publicly distributed documents relating to the project. We are particularly concerned that the Draft Environmental Impact Statement does not adequately display and discuss the degree to which any alternative affects the status of roadless areas. We also are concerned that no real consideration has yet been given to remedying shortcomings of the Tongass Land Management Plan revision as to ensuring wildlife viability and adequately justifying the use of clearcutting (with or without reserves). Thanks you in advance for considering these concerns as you develop a Final Environmental Impact Statement.

Sincerely,

/s/

Nathaniel Lawrence

71 Stevenson Street
Suite 1125
San Francisco, CA 94105
415.774.0220
Fax 415.495-5996

6310 San Vicente Boulevard
Suite 250
Los Angeles, CA 90048
323.914-6590
Fax 323.934-1210

1200 New York Ave., NW
Suite 400
Washington, DC 20005
202.289-4648
Fax 202.289-1060

40 West 20th Street
New York, NY 10011
212.727-2700
Fax 212.727-1773

From: William H. Miller
2409-a Sawmill Creek Rd.
Sitka, AK 99835

2/27/00

Finger Mountain Planning Team
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Regarding: DEIS comments to be entered into the record, for the Finger Mountain Sales Project

Dear Team Members,

I would like you to include the comments by Sitkans for a Sound Economy as mine as well. *please add*

I would also like to add that I believe that the Forest Service is *based* toward pushing this sale through. It has become obvious that the general feeling within the Forest Service is that jobs and promotions are dependent on timber volume harvested.

Thank You,

William H. Miller
William H. Miller

P.O. Box 503
Tenakee, Alaska
99841
January 24, 2000

Jim Franzel
attn: Finger MT. EIS
USDA Forest Service
204 Signaka Way
Sitka, Alaska 99835

Dear Mr. Franzel

I would like to see one of the two proposals actually happen. I would rather like to see the Indian river logging road have more cut on it than the Crab Bay and In-between have any cut on it. The timber sales would be good for Tenakee Inlet because it might bring more kids to the school and then we would not have to worry if there are going to be enough kids for the school to stay open. It also SHOULD open some more jobs for some people. I don't want to see the Crab Bay or In-Between get logged because some of my subsistence comes from that part of the Inlet, and I don't want to see it get logged.

11-8

Sincerely,

Levi Odenheimer

Finger Mountain Timber Sale(s)
Draft EIS Comments

Name Donald Odenheimer
Address P.O. Box 503 Tenakee Springs, AK 99841

Comments:

It's time to again say NO to more large scale logging in Tenakee Inlet. Do you want to live in a forest that looks like Cube Cove or Haanah? I don't plan on taking 21 million board feet of timber directly across from Tenakee Township is totally unacceptable. Kadashan Bay is a heavily used recreation and subsistence use area. Helicopter, boating and logging noise will certainly change the quality and character of the bay. If you add the Indian River Project directly logging Tenakee to the Finger Mountain sale we end up with 10 years of industrial activity in our front and back yard. As you know Tenakee Inlet has already had major clearcut logging throughout the inlet. Naturally these bays left vacant are receiving more and more pressure we need our old growth forest intact. Have you tried to catch a crab at Corner Bay? This bay is closed to commercial crabbing at duskness and still there are no crabs. No one goes there for subsistence crabbing. Is Crab Bay next? Where are the Coho salmon which used to thrive and plentiful in Corner Creek and the Beaver Pond on that stream? Where did all the cutthroat trout go? Is the Crab Bay drainage next? I hope not. I do hope that you will stop, look listen and respond favorably to what the people of Tenakee Inlet are saying regarding your proposed logging of the Tongass in Tenakee Inlet. Thank you.

Donald Odenheimer

(continue on back)

IN favor of Alternative "A" NO ACTION
STOP Clear Cutting in Alaska.

Wesley Munford

Jim Hunter

William Macmillan

Michael J. Quinn

Thomas V. Hupfel

Brian J. Long

Steve Bernhardt

Larry Kelly

Robert Smith

Andrew Barland

William J. Kearney

Phanie Johnston

John Smith

Alfred Teller

William H. Smith

Tommy Vetter

Robert J. Aguirre

Wayne Smith

Colin Bridgman

Stanley Horn

Robert L. Hagan

Regan McQuay

Norman Smith

Robert Smith

Deann Jackson

Reggie Miller

Preserve our environment
STOP Clearcutting Now

Continued on
Reverse side

Deborah Washington

Gregory R. Curtis

Kurtis M. Allen

Raymond J. Jones

Gregory J. Jones

Robert J. Jones

Charles W. Hinton

J. Jackson

D. B. Jones

J. Jones

H. Jones

J. Jones

J. Jones

J. Jones

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J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

Ronnie Bank

James Stach

M. Brooks

W. Edwards

X. Carter

M. Jones

J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

J. Jones

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Gene Preston
15101 Seguridad Drive
Rancho Murieta CA 95683
Home Phone 916-354-1693

February 09, 2000

James Franzel, District Ranger
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

1-1 It has come to my attention that staff in your office are promoting a plan to allow clear cutting of virgin forest in the area of Tanakee Springs, Alaska. I have visited Tanakee three times previously. This summer we plan to rent a tug boat and return to Tanakee again. There are already areas around Tanakee that are scared by clear cutting. I understand why that is the preferred method of "harvesting" because the soil in that area is very poor and it will take hundreds of years for new growth to appear. I presume the wood of those trees, some of which are hundreds years old will be used as chips since the trees are too small to be used as wood for construction. 3-2 I do not understand this kind of destruction of our environment. Alaska has been one part of our country where we can go to find nature the way God intended it. I suppose the argument will be made that cutting down trees and grinding them up creates jobs. Why can't we put people to work doing things that are beneficial to our environment? The short term gain for Companies in the lower 48 does not justify the kind of permanent destruction being proposed here. 7-4 Alternative "A" is the only logical alternative. Please protect the beauty and the fishery around Tanakee so that I can return to that area for many years to come.

Sincerely,

Gene Preston
Gene Preston

Office of
James Franzel
District Ranger
attn: FINGER MOUNTAIN DEIS

2-24-2000

Gentlemen:

I've lived in and around Tanakee for over 36 years. Having seen the high-grading of cedar from Indian River in 1979(I actually worked there and saw this in person), I see a similar pattern occurring with the Tanakee Inlet portion of the proposed Finger Mountain sale.

Also, the proposed re-opening of the log dump site at the mouth of Crab Bay will be located in the area where Tanakee Inlet herring spawn during their low cycle. This explains why the herring population in Tanakee Inlet remained low during the late seventies until the very early nineties. This during a time when no sizeable herring harvests took place. The herring in Tanakee Inlet are a local population and do not migrate to outside waters. Almost every form of wildlife living in or passing through the Inlet depend upon this local herring population. They are the lifeblood of Tanakee Inlet.

6-1
11-1
Most important, the Forest Service still refuses to accept the fact that Tanakee Inlet is one body of water. The north side of Tanakee Inlet is in the Hoonah Ranger District and the south side of Tanakee Inlet is in the Sitka Ranger District. The separate Environmental Impact Statements of these two separate ranger districts do not take into account the combined accumulative effects they have upon Tanakee Inlet. Just because the Forest Service is compartmentalized does not mean that nature is the same way. In fact, time and time again, we find that all elements of any ecosystem are most definitely related to one another. This is why we study the potential adverse impacts our proposed actions will have on an ecosystem and write environmental impact statements in the first place. The Environmental Impact Statement written for logging the south side of Tanakee Inlet (Finger Mountain Sale) does not take into account the cumulative effects of the proposed logging on the north side of Tanakee Inlet (Indian River Sale). Since both of these potential timber sales occur on drainages which flow into directly into and have log dump sites in Tanakee Inlet, any Environmental Impact Statement that does not consider the potential effects that both logging operations will have on Tanakee Inlet cannot be even remotely be considered as valid. This includes the Environmental Impact Statement for "Alternative B" in the Tanakee Inlet portion of the Finger Mountain Sale.

The economy of Tanakee Springs does not depend on logging Tanakee Inlet. In fact, the economy of Tanakee Springs depends on not logging Tanakee Inlet. The whales have finally returned in numbers. We haven't seen a return of our winter King salmon yet but we do have an abundance of marine wildlife in numbers that haven't been around since the early seventies. The halibut are back at the mouth of Crab Bay again. The Canadian geese population has been visibly increasing, and the herring are definitely back in numbers not seen since shortly after the introduction of large scale timber production (logging) in the mid-seventies. The Economy of Tanakee Springs depends on a relatively small number of repeat tourists who come to enjoy the peace and quiet afforded by Tanakee Inlet, something that very few places in the world can provide. To start logging Tanakee Inlet by harvesting underpriced timber for a short term gain at this point in time would be detrimental to the majority of people who would be affected to say the least.

I strongly recommend "Alternative A", No Action.

Thank you for your time.

Sincerely,

Geoff Pegues

Geoff Pegues
COPY 2-25-2000
FAXED

4321 SW Genesee St., #1
Seattle, WA 98116-4161
February 16, 2000

James Franzel, District Ranger
204 Signaka Way
Sitka, Alaska 99835

Dear Mr. Franzel,

I'm writing you this letter to adamantly protest any clear cutting in the 6-3 Finger Mountain area. There is much documentation to show clear cutting creates terrible erosion conditions. With all the rainfall in Finger Mountain area why would any Forest Service people support such senseless action? Come to think of it....why is there any letting of forest parcels for timber cutting sales in view of all the North Slope oil money available for the state of Alaska....and its' needs?

I would be very interested if you could tell me any really positive thoughts about clear cutting. (the only one I can think of isclear cutting may get rid of the mistletoe parasite...but I wonder if the conifers in SE 9-1 Alaska are bothered by it?) I lived in Alaska for nine years in the Fairbanks area and traveled and worked in different parts of Alaska. Southeast Alaska is a conifer jungle and a sort of paradise. Is it really necessary to spoil the beauty of the area with clear cutting and wreck up a lot of wildlife habitat?.....all for some \$? I sure wish I could cause a 1-7 paradigm shift in peoples thinking.....to intensely preserve the incredibly beautiful southeast Alaska area.....for all to visit and enjoy in future years.

Sincerely,

Janet L. Parsons
Janet L. Parsons

Jim Franzel,

2/24/00

You are a steward of one of the last remaining wildernesses on earth. I'm sure you've had time to pause and consider this fact, and be in awe of it. It must be ~~maraculous~~ to consider, as I'm sure you have, what this continent was like but two hundred years ago; one hundred years, fifty years, even a mere twenty years ago, and here you are, a steward of the land, an individual who ~~has~~ will have an influence in regards to what is done with among the very last stands of old growth forest in all the world. I'm sure you feel the weight ~~and~~ of the responsibility; I am certain that I would.

I realize that you have not been hired for the strict purpose of conserving the last remaining wildernesses in our nation. I realize that your duties are not as simple as that. Certainly you must be flexible and mediate between those that seek to use available resources and those that wish to conserve them.

Perhaps you as I feel for, and identify with those that wish to harvest old growth timber. Perhaps logging has been in their families for generations. Perhaps you admire the hard work and the frontiersman-like air that the logger endures and breathes. Surely I at least, as a fisherman, understands what it is to be reliant on the harvesting of a natural resource, and so I feel akin to those who harvest timber.

However sir, I must here state that I participate in the salmon and halibut fisheries of Alaska because I believe that these fisheries are managed intelligently and in good conscience, that they are sustainable resources. I should hope that I would demonstrate my concern and the earnestness of my beliefs in abandoning these fisheries

if I had reason to believe they were no longer sustainable, if due to overfishing they were in jeopardy.

Science and experience have demonstrated that old-growth forests are nearly if not altogether impossible to replicate once they are destroyed. And seeing that on a global and even on a national level the last remaining percentage of old growth forests ~~balance previously in the~~ ~~water single digits~~, standing are a mere sliver of what they once were, a rare precious treasure literally on the brink of extinction, I cannot, despite my respect for the logger, be pleased to see the smallest fraction of it destroyed.

Specifically ~~the~~ I object to the proposed timber sale in Tenakee Inlet, a region that has already felt the heavy, destructive blow of logging, and furthermore object to the fragmentation of existing wildernesses that may never will inevitably occur if new logging roads are built in this area. Generally speaking, to make an analogy, I would forego landing the stoutest, most beautiful shimmering chinook salmon if it represented the chinook resource in direct proportion to ever come to the surface, if I knew chinook runs to be in as much danger as the old growth forests on this planet.

May your conscience guide you in your difficult decisions.

Lance Preston
Sitka Resident

LEON A. PHILLIPS, M.D.
7206 NO. MERCER WAY
MERCER ISLAND, WASHINGTON 98040

MR. Fred Salinas

U.S. Forest Supt.

204 Sigimuk Way

Sitka, Alaska 99835

DEAR Sir:

It has come to my attention that there is a pending timber sale in the Finger Mountain area on the south side of the inlet about 10 miles beyond Tenakee Springs.

I am very concerned about the effect this sale will have upon the resident wildlife and the pristine scenery. As a tourist to this region it would be very disappointing to encounter the scenery change and associated noise that would

February 29, 2000

To Whom It May Concern

As residents of Sitka, Alaska, we are opposed to your proposed Finger Mountain area timber sales for the following reasons:

1. Roads will be built into the Tenakee Springs watershed area. Besides being a watershed, this area is also important for subsistence needs. 2-1
2. This is a prime habitat area for many species, not the least of which are bear, marten, crab, deer and fish. 1-7
3. This area is also heavily used for recreation by locals and tourists. 3-3
4. Some residents depend on the area for income from fishing, crabbing, guiding, charter cruises and trapping.
5. Clear-cutting and clear-cutting with reserves will be the methods used to harvest the timber. These methods are the most detrimental to the environment, usually leaving the area uninhabitable by wildlife. Further, the area is left an eyesore and takes many years to recover, if at all. 9-1
3-2
6. What is the purpose of even putting out a bid for this timber when the timber sales markets are in bad condition and there are no large timber operators left in the area to take advantage of the harvest? 7-1

Please rethink your decision to make this sale offer. Thank you for your time in this matter.

Megan and Walter Pasternak
Box 830
Sitka, AK 99835

I know this is a little late
I hope you can still include it.

Walter Pasternak

occur with a logging operation
in this area
You people must give this
sale careful consideration as
it will affect thousands of
people like myself.

Sincerely yours,
Leon A. Philpitt

ROBERT L. POLLARD, D.D.S.

2101 MERIDIAN E
EDGEWOOD, WA 98371
TELEPHONE (206) 927-3886

10 February 2000

U.S. Forest Service
James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signake Way
Sitka AK 99835

Dear Sir:

This letter is to support the people and biological environment of Tenakee Springs, Alaska.

I understand there is a proposal to allow sale for timber harvest of the area designated as "Finger Mountain", timber sale tract. Since all the proposed logging would be in Tenakee Inlet at Crab Bay and adjacent drainages of In-between Creek in the vicinity of Seal Bay even the naming is misleading.

Clear cutting in this area would severely impact the drainages in the vicinity of Seal Bay. The effects of sedimentation on spawning beds and estuarine wildlife is well documented by many researchers and reviewed by the symposium on new forestry practices. 11-4

It seems unconscionable that such a plan would be considered at this stage of development and understanding of environmental consequences. 11-1

If we are to avoid mistakes of the past and preserve wilderness for our progeny these practices must be abandoned.

Harvesting of timber must be viewed from the context of selective logging and sustained yield on a rotational basis with careful consideration of downstream effects. 8-2

Forests are our legacy for the future generations and the decisions to embark on this path of new forestry practices must begin now.

Thank you for your consideration.

R.L. Pollard D.D.S.
RLP/lp
cc: Sam & Jean McBeen
KOMO TV-Seattle

Robert L. Pollard, D.D.S.

February 18, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
U.S. Forest Service
204 Signake Way
Sitka, Alaska 99835

Dear Mr. Franzel:

I am writing concerning the timber sale at Finger Mountain. Multiple use forest lands can preserve wildlife and forest habitat. I would support a timber sale, only if alternative measures to logging are used. Some of the alternative measures I would support combine ecosystem management with acceptable practices given the social and environmental objectives (subsistence uses, view, watershed protection, wildlife corridors and habitat conservation plans). These include:

- Select tree logging.
- Shelterwood - a method that leaves 30% of trees unharvested.
- Variable retention -- leaves structural elements of the forest intact.
- Patch cut -- a clear cut no larger than one hectare.

9-1

Tenakee Springs is an isolated community that is dependent on subsistence resources of the inlet and surrounding area in close proximity to Tenakee Inlet. It is important to maintain buffer zones to protect the diversity of wildlife. If necessary, a more in-depth analysis to minimize and mitigate effects of forest logging practices. It is important that the footprint logging leaves behind is reasonably controlled to lessen the impacts to communities and local resources.

Thank you for the opportunity to comment.

Sincerely,

Patricia Phillips
P.O. Box 33
Pelican, Alaska 99832
Email: poljcp@ptialaska.net

Sitka Conservation Society

P.O. Box 6533

Sitka, Alaska 99835

(907) 747-7509 Phone

(907) 747-6105 Fax

sitconsy@ptialaska.net E-mail



Jim Franzel, District Ranger
U.S.D.A. Forest Service, Sitka Ranger District
201 Signaka Way, Sitka AK 99835

Re: Comments on Draft EIS for Finger Mountain

February 28, 2000

Dear Jim:

Thank you for the opportunity to comment upon the draft EIS for the Finger Mountain Timber Sale.

The Sitka Conservation Society has multiple concerns with several aspects of the proposed alternatives. The Finger Mountain Timber Sale, as proposed, is not in the best interest of the public. Habitat would be damaged, water quality degraded, tourism and recreational opportunities will be impacted, all without a clear economic benefit to the public and nearby communities. The range of alternatives is not adequate. The Forest Service should propose new alternatives which consider our and other public concerns. The no-action alternative (Alternative A) should be selected by the Forest Service.

As noted in the Draft EIS, "Alternative A proposes no new timber harvest or road construction from the Finger Mountain project area at this time." At some future time, when the need for logging Southeast Chichagof is demonstrated and when more is known about the consequences of past and future logging, perhaps a justifiable logging plan can be devised. Given present knowledge and data gaps, we do not believe it possible to sustainably harvest timber from this already heavily impacted peninsula. Other resources economically and culturally important to the public will suffer irretrievable damage.

Alternatives:

There is not an adequate range of alternatives. For example, there is no alternative that resembles the Chichagof Conservation Council (CCC) alternative. While elements of this alternative are included in the proposed alternatives, there is no single alternative that incorporates only the CCC desire for a small locally utilizable sale without additional impacts. The CCC alternative would simultaneously offer "opportunities for the long-term promulgation of very small timber sales from this sale area," eliminate new road construction, emphasize alternative logging practices, and preclude the construction of a new LTF. No single, present alternative addresses all of those issues.

I am writing concerning the FINGER MOUNTAIN TIMBER SALE. I have the following comments on the Draft Environmental Impact Statement (DEIS):

1. The DEIS should consider the long-term cumulative impacts of past, present, and future timber sales in the Tenakee Inlet area. The Finger Mountain sale, along with the Indian River Timber Sale behind Tenakee Springs, will make industrial logging operations the primary use of Tenakee Inlet for the next 3 to 5 years. Tenakee Springs#8217; economy, which relies on Tenakee Inlet for commercial and sport fishing, subsistence and sport hunting, trapping, tourism and recreation, will suffer from these two sales. 11-1
2. The clearcuts proposed for this sale will destroy important habitat and create a visual scar in scenic Tenakee Inlet. This timber harvest level needs to match the needs of the Tenakee mills rather than be shipped out to provide jobs in Ketchikan, Wrangell, or Japan. 3-2
3. I fear that the yellow-cedar in the sale will be exported in the round with little added processing. The sale must require local value-added processing of the wood.
4. This timber sale must be done without constructing new roads or clearcutting old-growth in roadless areas. The plan to construct roads in the currently roadless Little Seal Bay watershed needs to be discarded. 3-1
5. This area is important for local recreation and tourism businesses, subsistence and sport hunting, and commercial and sport fishing. It is important that the DEIS protect subsistence and sport use of deer in the area. 2-1
6. Dumping of logs directly into the seawater has been shown to be a poor practice and cannot be allowed. 4-1
7. An alternative to this sale has been proposed by local residents, called the CCC Alternative. This alternative emphasizes selection logging methods, stays out of roadless areas, and provides small sale opportunities for local, high-value added processors. The Forest Service should examine this alternative in its DEIS and make it the preferred alternative. 5-1

----- Jim Reiffeldt Juneau, Alaska -----

Economics:

This EIS does not adequately address the economics of this sale. As written it is impossible for the interested public to compare the economic costs of each alternative. It is necessary that a table (other than the esoteric "Economic Efficiency Table") be included in the FEIS that summarizes the economic costs associated with each alternative.

7-3

A useful, comparative table should include at least such things as:

cost of road construction, cost of road maintenance, cost of road monitoring, cost of LTF construction, cost of LTF maintenance, cost of LTF monitoring, cost of thinning, annual cost of increased fuel use to subsistence users and recreation users that will be forced to travel further as a result of each harvest, annual cost to sport hunters due to the restriction of deer harvest that will result from each sale, cost of lost tourism dollars, etc.

For this EIS and all subsequent EIS's when a proposed alternative relies primarily on clearcutting the table should include the cost of legal fees potentially resulting from the litigation that will follow appeals. The economic-costs section should also include an estimated cost of preparing a timber sale.

Much of the existing economic discussion and analyses associated with this EIS is unacceptable. The uncertainty of many of the costs of this sale must be resolved in this EIS. One example of the type of unacceptable discussion is the following EIS quote: "Costs and revenues associated with commercial tourism in the project area have also not been estimated directly for each alternative." The EIS justification, "It is difficult to determine what changes in tourism and recreation opportunities the action alternatives would have," is weak and unacceptable. Difficult or not, such is the NEPA process. This and other inadequacies must be resolved in the FEIS.

Subsistence Impacts:

ANILCA and TLMP Inadequacies

All of the Finger Mountain Timber Sale(s) action alternatives will significantly depreciate the potential quality of subsistence use within the project area and Tenakee Inlet. Some aspects of the proposed timber sale(s) will impact subsistence qualities to such a degree that the sale(s) would be inconsistent with ANILCA provisions.

2-1

According to TLMP subsistence forest-wide standards & guidelines and in accordance with Title VIII of the ANILCA, it is the policy of the Forest Service that the Tongass will be managed: "Consistent with the purposes for which National Forest System lands in Alaska were established, sound management principles, and the conservation of healthy populations of fish and wildlife, the utilization of the National Forest System lands in Alaska is to cause the least adverse impact possible on rural residents who depend upon subsistence."

The Forest Service has the option of choosing either even-aged or uneven-aged harvest methods. Uneven-aged harvest methods have proven to be consistent with sound management principles, economically feasible and less damaging to deer habitat than even-aged harvests. Despite these facts, the preferred alternative in this EIS relies exclusively on even-aged harvests.

1-5

This sale clearly fails to cause the "least adverse impact possible" to rural residents dependent on subsistence. This sale clearly cannot be found consistent with ANILCA, NMFA, or TLMP.

ANILCA further requires that subsistence uses of renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska. In the past the spirit of this mandate has been badly abused. The mandate has been wrongly and narrowly interpreted as pertaining only to the harvest of the resource in question. For example, in the past the extension of the interpretation of this ANILCA mandate would wrongly be capped as applying to deer as follows, [the subsistence uses of deer shall be the priority consumptive uses of all deer]. However, the spirit of the mandate as applied to deer would read, [the subsistence uses of the forest as critical deer habitat shall be the priority consumptive uses of all forests]. This EIS fails to embrace the true spirit of this ANILCA mandate. For example, the EIS claims that if a restriction on deer harvest occurs it will first affect sport hunters and then subsistence hunters. This EIS also admits that in the future the cumulative effects of logging may pose a significant restriction on subsistence deer use. The preferred alternative should be an alternative which does not cause subsistence impacts.

Inadequate Deer Analysis

The analysis used to project future subsistence demands on deer within the project area is insufficient. Information found in the 1992 FEIS shows that between 1987 and 1990 an average of 8 percent of the deer harvested by Juneau residents came from the project area and that WAA 3629 had the highest harvest reported by Juneau residents. Increased ferry service as proposed by the Alaska State Department of Transportation will increase deer harvest by people from Juneau and other areas. Also, the recent decade has had very mild winters. The next 20 years are predicted to be much harsher on deer. This increased use and winter mortality should be factored into subsistence evaluations.

Furthermore, the deer analysis referred to in this EIS is misleading and flawed (see further detail under our wildlife section). The analyses focus on the percent reductions of high-value habitat for each alternative. Nowhere is it acknowledged what small percentage of the project area is high-value habitat. The Finger Mountain Project Area is 72,780 acres and of that only 6,404 acres are high-value deer habitat—that is only 8.7%. You can see how misleading the EIS becomes when it speaks in the dark of this fact: "In Alternative B and D, 98 percent of the existing high-value deer habitat would remain, while 99 percent would remain if Alternative F were chosen." The project area is not a meaningful ecological unit and should not be used as the base of reference for this analysis. It would be more meaningful to relate changes in habitat to the watershed harvested. According to our calculations (see Appendix A) alternative B would harvest 24% of the high value deer habitat in the value comparison units where harvest occurs. The FEIS should contain improved analyses.

1-9

Other Data Gaps

According to the Forest Service there will be no subsistence impacts. Tenakee residents are now especially concerned about the preferred alternative, in which currently roadless areas above Inbetween Creek will be logged. This area has good deer hunting grounds, and a late run of coho which Tenakee residents utilize heavily. This local knowledge is not part of the EIS or the S.E. Chichagof landscape assessment, which states there is no major subsistence fishery there, and habitat capability is low for pinks and coho.

Species found within or affected by activities within the project area and used for subsistence purposes include herring, salmon, trout, other finfish, shell-fish, other marine invertebrates, deer, marine mammals, and water fowl. It may possibly be true that deer are the only subsistence resource whose use may be significantly restricted as a result of this project. However, NEPA requires that all possible effects not just potential subsistence resource restrictions be considered and discussed.

The types of discussions that should be found in the subsistence section of this DEIS include the following. Subsistence uses associated with Crab Bay include the harvesting of marine mammals, marine invertebrates, and salmon. The bay's estuary also provides important habitat to subsistence salmonids. Any type of LTF may significantly affect all of these subsistence uses; at minimum by restricting temporary access to them. However, a drive down ramp LTF in this bay will significantly effect many of these uses by reducing shellfish and other invertebrate habitat, impairing juvenile salmonid habitat, disturbing hearing spawn, etc.

Log transfer facilities:

Barge facilities should be mandatory for ltf's. We support the Forest Service's concern with impacts to herring spawn. The impact of the log transfer facility should be examined in a comprehensive way, beyond the structure itself, since there are often associated camps, boat traffic, planes, etc. The draft EIS should provide more substantive information on the bathymetry, flushing capability, current biological productivity and species diversity.

Clearcutting:

The Forest Service should abandon clearcutting as a silvicultural practice. It is not in the greatest public interest. Clearcutting changes hydrologic flow patterns, and raises landslide and sedimentation risks, thereby impacting water quality and salmon rearing habitat. Clearcutting with reserves is an untested silvicultural option, which is not likely to do enough to protect the landscape from erosion, stream flow changes, or wildlife habitat.

Furthermore, TLMP states that the criteria for the selection of regeneration methods to be used on National Forests in Alaska are in 36 CFR 219.27(b) and the Alaska Regional Guide (November 1983). TLMP states that the selected method must meet all the criteria, including:

"Not be selected solely on the basis of greatest dollar return or highest output of timber, and not permanently reduce site productivity or impair conservation of water and soil resources (36 CFR: Criteria 3 and 5)."

Because this timber sale cannot justify the use of even-aged management and meet the above requirements the even-aged harvest methods proposed in this EIS are illegal.

This EIS states of this project's even-aged management that, "The objectives of these prescriptions is to create highly productive, healthy stands for timber management while, in some cases, maintaining structural diversity that benefits many wildlife species by retaining some residual large diameter trees and smaller advanced regeneration."

Therefore it is admitted that the only justification for clearcutting within this project area is to "create highly productive, healthy stands for timber management".

Recent scientific evidence and new understanding of forest health concur that clearcutting is not a desirable means of sustaining forest productivity or health. An example of a past misconception that was commonly used to justify even-aged management was the belief that dwarf mistletoe was a sign of a forest's unhealthiness. Forest service personnel and others now recognize that dwarf mistletoe is a natural and essential part of the biological diversity of the native forests of southeast Alaska. It creates important habitat niches for many species, and is rarely, if ever, a direct cause of tree mortality. Another misconception used to justify even-aged management was the belief that the Tongass suffered a shortage of spruce. As was recently acknowledged by many forest service employees, there is simply no scientific basis for such a belief.

Because the elimination of dwarf mistletoe and artificially increased amounts of spruce regeneration only benefit the economic productivity of a forest and do not benefit the biological productivity of the forest, it is proven that the justification of this project's even-aged management techniques are subservient only to economic gain. Hence, they are unlawful.

Road Issues:

No new roads should be built in the Tongass. Remaining roadless areas are vital in maintaining ecosystem functions and wildlife diversity, not just for the region, but the nation and globe.

The DEIS proposes new roads in currently roadless areas. A comprehensive national policy is now being designed for management of national forest roadless areas. No roadless areas should be impacted until that policy is finalized. The project cannot be said to be in the best public interest without the benefit of the analyses of the roadless policy.

No roads should be built or proposed to remain open without guaranteed funding for road maintenance. The Forest Service began the process of national road policy examination due to the huge backlog of roads needing maintenance.

The number of road crossings of streams will rise substantially from current levels. This substantially increases the risk to stream habitat and watershed hydrology, especially if maintenance funds are not adequate. The DEIS did not adequately address this impact.

Watershed Health:

While AIF proposes the lowest level of logging, this logging would occur in already heavily impacted watersheds. Some of the logging methods and locations proposed in this alternative lack long-term studies and are speculative in terms of potential impact to resources.

In the Southeast Chichagof Landscape Analysis, produced by the U.S. Forest Service Chatham Area, watersheds in the area were ranked with a watershed risk index, habitat capability, level of human disturbance, and overall concern. An index of 7 or greater was a trigger for concern. The Crab Bay watershed had a risk index of 7.9, high coho capability, moderate pink capability, moderate existing human disturbance, and moderate ranking for overall concern. The Fog Creek watershed had a risk index of 6.5,

high coho capability, moderate pink capability, moderate existing human disturbance, and moderate ranking for overall concern. The Inbetween Watershed had a ranking of 6.7, so was close to the trigger level for concern.

The Forest Service states that continued harvest will not further impact these watersheds. That depends on the effectiveness, degree of implementation, and monitoring of best management practices; as well as adequate funding for road maintenance for those roads left open. There is a significant proposed increase from current conditions in the number of stream crossings by roads (Table Water-6). Monitoring and maintenance programs are currently not adequately funded, leading to the roadless policy proposal. It is not possible to harvest timber in these watersheds without impact. Alternative A is the best choice to maintain resource values in these watersheds.

We are concerned with the amount of logging proposed in Alternative F on high hazard soils. In the past, the Forest Service has been able to concentrate logging away from high hazard soils. Using selective logging methods upon this soil type is experimental, and should not be relied upon for commercial sales. It will take decades to establish whether it can be done safely. Some alternatives include harvest acres in which more than 50% of the trees would be removed on high hazard soils (Table Water-2, Chap. 3, p. 40, draft EIS). This should not be allowed.

The analysis of stream flow (p.3-33) impacts resulting from timber harvest is cursory. The referenced studies in Indian River are premature. Changes in stream flow due to logging can take decades to develop. The Forest Service should make decisions on the conservative side. Scientific studies from the Pacific Northwest referenced in the EIS do show impacts on stream flow. There is no basis for supposing those impacts will not appear in the Tongass. Ecosystems here are adapted to cooler temperatures and greater precipitation. The preferred alternative will reduce stream flow due to clearcutting impacts. The FEIS should contain an improved discussion of this issue.

Water quality impacts may be the most serious threat from the proposed Finger Mountain timber sale. This sale proposes clearcutting areas higher on the hillsides on less stable ground. Standards and guidelines adopted under the new Tongass Land Management Plan are not adequate protection in these locations. Current risk assessment models for watershed logging compare watersheds only to each other, which may not be a valid assessment if their sediment levels are already elevated. Databases must be built on baseline parameters in unlogged watersheds.

The proposed actions should have been designed in the context of recent research that shows headwater streams are more complex and more important in overall watershed stream quality than previously known.

As the headwater streams go, so goes the rest of the watershed network. 80% of watershed stream mileage is in streams 1st and 2nd order (or class 3 and 4 in terms of fishery ratings). Steep gradient streams have decreased predictability and a multiple state nature compared to low gradient steady-state streams, which have been much more extensively studied (Benda, Lee, 1997). Current models do not account for the stochastic nature of headwater streams, nor is current knowledge adequate to characterize or predict these streams or the total consequences of management actions around them. A disturbance-based classification system is needed which is better able to anticipate this temporal variability.

The management implications are that single-value targets are unrealistic. For monitoring to be meaningful, it must be conducted over long time periods or for many stream systems. These headwater stream systems control the release of sediment to the rest of the stream system. Sediment supply is critical for maintaining habitat for stream inhabitants. Landslides triggered by logging and road-building tend to scour stream channels to bedrock. Removing large trees found in the most productive old growth increases sediment after debris torrents, making episodic events more with larger releases of sediment.

Tree root cohesion is the most important factor in stabilizing soils. As the roots decay, the soil may slide. Decay occurs 3-10 years after clearcutting, but takes 50 years in natural tree deaths (Johnson, A. 1997).

Headwater streams are vital sources of energy for anadromous salmonid streams in S.E. Alaska. The inflow of invertebrates into salmon habitat from headwaters is 6 times the in-situ production, showing that the fish are dependent upon the production in the upper reaches (Wilpfi, Mark, 1997). Production is dependent upon the presence of Large Woody Debris. Sometimes more than half of the fish diet is insects that have come in from the riparian areas along the stream networks. It is in the greatest public interest, recognizing the importance of commercial and sport salmon fisheries to our economy, to not impact these watersheds further by continued logging.

Fisheries:

TLMP timber production management prescriptions require that all fish standards and guidelines will be met. Included among these standards and guidelines is the requirement, "Consider topics such as erosion processes, watershed hydrology, vegetation, stream channel morphology, water quality, species and habitats, and human uses, during analyses." TLMP also requires that the forest service shall "Coordinate with the Alaska Working Group on Cooperative Forestry/Fisheries Research, state and Federal agencies, and the Forestry Science Laboratory, in maintaining a continuous program for research, monitoring, and assessment of impacts of land-use activities on fish habitat." This DEIS has failed to meet these standards by not adequately addressing forest succession, evapotranspiration and the long-term effects on fisheries resources. This issue has been raised on several occasions by state and federal agencies and has been ignored. This EIS does not adequately address the issue.

BMPs and S&Gs

The EIS claims that because the application of Forest Plan riparian standards and guidelines will be used, no significant adverse effects on salmon or trout species are "anticipated" under any alternative, or cumulatively. However, there is little scientific data available supporting the belief that current BMPs and S&Gs adequately protect anadromous fish habitat. For example, the EIS admits that, "No long-term peer-review studies have been conducted in Southeast Alaska regarding the effects of timber harvest on water yield during low-flow periods." The TLMP Revision FEIS admits that, "Some effects to fish habitat may also result from land management activities, but the magnitude of the effects cannot be calculated."

Furthermore there is no guarantee that BMPs and S&Gs are being fully implemented. For example, the Tongass Monitoring & Evaluation 1998 Report stated

that, "Due primarily to budget and personnel constraints, no re-surveys of post-harvest buffer effectiveness sites, or surveys of new sites, were conducted in 1998." As a side note, if the Forest Service is lacking the finances to ensure that current and past harvest activities are not damaging forest resources then the agency should not be involved in committing more resources to potentially perilous activities. This belief is justified by TLMP.

TLMP mandates that, "For all projects and activities considered, the standards and guidelines for each management prescription will be used, regardless of the levels of outputs or numbers of projects achieved, and regardless of actual budget allocations." A TLMP S&G for managing fish is that monitoring requirements must be met. The TLMP Monitoring & Evaluation Plan requires that monitoring reports, "will summarize the monitoring activities conducted during the year covered and the results obtained, address each of the monitoring questions listed in this monitoring plan and evaluate the implementation of TLMP." The TLMP monitoring plan includes the monitoring question, "Are fish and riparian standards and guidelines effective in maintaining or improving fish habitat?"

Cumulative Effects

Cumulative impacts are another problem faced by anadromous fish populations within the project area. This EIS defines cumulative impacts; "Cumulative effects result from incremental results of actions when added to other past, present, and reasonably foreseeable future actions. They can result from individually minor, but collectively significant, actions taking place over a period of time." Tenakee Inlet has been a site of repeated logging activities over the last few decades. There is also simultaneous and future logging planned within the area.

According to the USDA publication, Report to Congress: Anadromous Fish and Habitat Assessment, salmon viability is dependent on both the quality of freshwater habitat and marine habitat. The report states, "Salmon and steelhead populations can become stressed if either marine or freshwater habitat quality declines. Rapid movement towards extinction is possible if both marine and freshwater habitat productivity decline simultaneously."

The report explains that the quality of the marine environment is based on current flows, favorable flows and unfavorable flows are cyclic over a period of 20-30 years. Over the past couple decades salmon populations have been exposed to favorable marine conditions.

The report then goes on to explain of fresh water habitat that "The quality of fish habitat in any stream depends on the condition of the area that it drains. Thus, watersheds are the basic active unit of forested landscapes; they control the quality of salmon and steelhead habitat and, to a large extent, the populations of anadromous fish present and numbers of fish that can be sustainably harvested." The report continues by stating, "Because logging is projected for all watersheds containing suitable-available acres during a rotation, and could be planned to recur over the entire area for repeated rotations, the disturbance could be relatively frequent in both time and space across the entire landscape subject to timber harvest. The cumulative effects of frequent disturbances in the Pacific Northwest have been shown to substantially reduce the quality of freshwater fish habitats resulting in negative consequences for species, stocks, and

populations of fish that depend on them, even if coniferous cover is left in buffer strips along the fish-bearing streams."

To summarize; viable anadromous fish populations cannot withstand a decline in both marine and fresh water habitat quality simultaneously, anadromous fish will soon be exposed to 30 years of unfavorable marine habitat qualities, the cumulative effects of logging in Tenakee Inlet have created unfavorable freshwater habitat qualities.

Recreation:

Cumulative Effects

As the DEIS states, there is the possibility that this sale could occur simultaneously with four other sales within the area including Indian River. As acknowledged in the DEIS, "For many people, part of the recreational experience of engaging in these activities is being in the quit, remoteness, and beauty of the surrounding environment." Even if just the Indian River sale and this one were to occur simultaneously, recreational opportunities for Tenakee Springs would be greatly limited for many years to come.

Lost Opportunities

This DEIS inaccurately minimizes the time that the recreational uses of Tenakee Inlet would suffer as a result of this project. For example, in speaking of visual impacts the DEIS states, "These potential impacts would be short-term effects, lasting for the duration of the timber sales or within five years of completion of the sales." In other words, no big deal you only have to live with it for 10 years.

We strongly disagree with the DEIS claim that recreation/tourism dollars would fully recover to preharvest levels after ten years. As the DEIS admits, "The community of Tenakee Springs has been developing its tourist trade for years." With the potential of at least two timber sales occurring simultaneously within Tenakee Inlet tourists will likely be turned off from any recreational experience that they choose to partake in within the area. This means that they will not recommend their friends to the area, nor will they return. The tourist industry that Tenakee has worked for will die.

Other Data Gaps

This DEIS does not adequately address the potential effects to recreation posed by this timber sale because it lacks much needed information. For instance, tourists come to Tenakee Inlet to hunt, fish, hike, kayak, view wildlife, view scenery etc. It can be assumed that tourists will accept a certain degree of "landscape modification", however it must also be assumed that a landscape can be altered to such a degree that it can no longer offer viable recreation.

The uncertainty of effects posed to recreation can be exemplified by the DEIS statement, "If there was a loss of recreation/tourism dollars, the community would probably progressively, then fully recover the yearly loss of income within ten years from the start of the project." This sentence sums up the fact that the effects of this sale on Tenakee's tourism industry are completely unknown. Until it can be shown and proven with more certainty what the effects will be on tourism this sale must be found unacceptable.

Old Growth, Wildlife, and Speculation:

Fragmentation and Connectivity

One of the most serious consequences of past logging operations in Southeast Alaska has been habitat fragmentation and the resulting threats to wildlife viability. As indicated in the Southeast Chichagof Landscape Analysis, the fragmentation of old growth habitat since 1956 has been dramatic. In 1956, almost all (89% or 106,896 acres) of the interior old growth habitat on Southeast Chichagof (120,066 acres) was *contiguous*, in 50,000 acre blocks or greater.¹ By 1997, there were *no* blocks of 50,000 acres or more; the largest remaining patch was less than 20,000 acres. In other words, there was no contiguous interior old growth habitat greater than 20,000 acres. This contrast between 1956 and 1997 is presented in two visually stunning maps in the Landscape Analysis, Figures 4-16 and 4-17.² As noted in the Landscape Analysis, the "consequences of fragmentation include a loss of interior old-growth habitat" and "[f]or most old-growth associated species, reductions in old growth habitat result in negative impacts."³ Because most of the wildlife species considered in this Draft EIS are associated with old growth habitats,⁴ the threats to these species must be very seriously considered.

In addition to this dramatic fragmentation of old growth habitat on Southeast Chichagof, there has been a corresponding loss in connectivity between old growth blocks. As noted in the Draft EIS, the "connectivity, or corridors, between habitat blocks in a landscape may be at least as significant to maintaining diversity as the size of the blocks. In the project area, connectivity along riparian areas, beach fringe, and between habitats at different elevations has been reduced by clearcutting within the watersheds."⁵ One measure of fragmentation and connectivity is isolation, which is measured in the Landscape Analysis as the distance between 200-acre patches of old growth. One study showed that the mean distance between patches has increased 150% since 1956, while the mean patch size has decreased by 50%.⁶ These are alarming figures; as fragmentation increases and as connectivity decreases, wildlife viability is at a greater and greater risk.

The threats to wildlife from fragmentation and from loss of connectivity have not adequately been considered in the Draft EIS, and the potential consequences and proposed protections are mostly speculative. Additional comments justifying this position will be presented in "Some Specific Wildlife Species."

1-1

Habitat Analyses

Habitat and habitat capability indexes used in the EIS have flaws in their presentations. The project area is not a meaningful ecological unit and should not be used as the base of reference for analyses. The statement is made that "In Alternative B and D, 98 percent of the existing high-value deer habitat would remain after harvest. This

1-8

¹ Southeast Chichagof Landscape Analysis, Michael Shephard, et al. U.S. Department of Agriculture, Forest Service, Tongass National Forest, Chatham Area, Sitka Ranger District, Sitka, Alaska. November, 1999. Chapter 4, page 30.

² Ibid, Chapter 4, following page 30.

³ Ibid, Chapter 4, page 30.

⁴ Ibid, Chapter 4, page 30.

⁵ Finger Mountain Timber Sale(s), Draft Environmental Impact Statement, USDA, Forest Service, Tongass National Forest, R10-MB-401. December, 1999. Chapter 3, page 7.

⁶ Southeast Chichagof Landscape Analysis, Chapter 4, page 12.

calculation is based upon the logged acreage habitat compared to the habitat acreage in the entire project area, which spans across peaks to two different saltwater passages. The project area is not a meaningful ecological unit and should not be used as the base of reference for this analysis. It would be more meaningful to relate changes in habitat to the watershed logged, or at least adjacent watersheds draining into one saltwater body.

According to our calculations (see Appendix A) alternative B would log 24% of the high value deer habitat in the value comparison units where harvest occurs. Removing 1/4 of the habitat in a watershed may not be catastrophic, but it is likely to decrease the population of deer using the watershed, thereby changing human patterns of use of that watershed.

Our analysis was similar for martin. However, previous habitat loss for martin has been more severe than for deer, ranging from 21-92% habitat lost in the three vcu's where logging is scheduled (S.E. Chichagof Landscape Analysis, Table 4-15 draft version. See Discussion in Appendix B. Discrepancies between Draft and Final Analysis). Taking 1/4 of the remaining 8% habitat in that VCU seems to guarantee that martin will be extirpated from that watershed.

1-9

Endemism

The Draft EIS fails to adequately consider endemic species. There is only one small paragraph in the EIS dealing with endemic mammals, in which it is stated that "[n]o surveys [for endemic mammals] were conducted specifically for this project" by the Forest Service, but that surveys by others "...have [not] identified any rare or endemic terrestrial mammal populations on Chichagof Island."⁷ This appears to be a failure of research because, for example, one of the three known specimens of Keen's Myotis collected in Southeast Alaska was collected on Chichagof Island.⁸ Further:

"The biology of this species is poorly known. It is represented in museum collections by only 59 specimens... Whether this is an indication that this species is actually rare, and thus a species of concern for conservation, is unknown. In Canada, the species is listed by COSEWIC as 'vulnerable'... so little information is currently available on this species that little can be said about its habitat affinities."⁹

The Forest Plan, under which this Draft EIS was developed, requires an evaluation of the existence of rare or endemic terrestrial mammals that may represent unique populations with restricted ranges. The lack of such an evaluation for the Draft EIS represents a major shortcoming and must be corrected. More discussion related to endemism will follow in "Some Specific Wildlife Species."

Our members are also concerned about species which are not yet considered particularly rare or threatened, simply because not enough is known about them. We would like to know more about potential impacts to migratory birds, kingfishers, are there rare or unique dragonfly species there, or other insects?

1-7

⁷ Finger Mountain Timber Sale(s), Chapter 3, page 14.

⁸ The Mammal Fauna of Southeast Alaska. S.O MacDonald and Joseph A. Cook. University of Alaska Museum. August, 1999. Page 21.

⁹ Ibid, page 21.

Cumulative Effects

The Draft EIS has only two short paragraphs discussing the cumulative effects on wildlife. It is stated that "[n]o old growth-dependent species would experience reductions in habitat capability; however, for species other than deer, it is not possible to quantify the future effects at this time. Any future timber harvest would have to evaluate these effects."¹⁰ This is an irresponsible statement; the Forest Plan requires (among other things) that viable populations be maintained. If you cannot demonstrate and quantify the cumulative effects of fragmentation and loss of connectivity on the viability of species (especially endemic species), the project cannot proceed.

11-1

Some Specific Wildlife Species

Keen's Myotis

Keen's Myotis is listed in the Draft EIS as a "Species of Concern."¹¹ However, in 1997 the Forest Service referred to it as a "Sensitive Species."¹² The Draft EIS states that "Keen's Myotis apparently [our italics] roosts in snags, hollow trees, rock crevices, and caves..." and then, based on this supposition, goes on to propose that protection of the bat will be done by retaining "...at least 3 snags per acre (if available) [our italics]."¹³ What if 3 snags are not available? The Draft EIS goes on to say that "[t]he amount of habitat removed could affect individuals of the species, but is not expected to negatively affect population viability."¹⁴ In the absence of documentation in the Draft EIS, please demonstrate how this speculative plan will protect the viability of Keen's Myotis. Also, please describe all actions taken by the Forest Service to determine the status of this subspecies on Chichagof Island. Finally, please explain how the distribution and population status of the animal will be effected by each of the action alternatives.

1-7

Bears:

Negative impacts to bear populations are likely with increased road access. Bear populations are an important economic asset to the communities of Sitka and Tenakee, providing tourism business and recreational wildlife viewing opportunities. Economic benefits resulting from logging for a few individuals and businesses must be counterbalanced by taxpayer and employment opportunity losses resulting from forest damage. While bear populations are currently healthy, there are increasing pressures on the species. The populations are under increasing pressure as tourism, trophy hunting, and global pollution increases.

The brown bear is listed in the Draft EIS as a Management Indicator Species (MIS). However, the Draft EIS, in discussing the effects of the action alternatives on the brown bear, does not mention that the bears on Chichagof, Admiralty and Baranof Islands may be "unique from all other brown bears in the world and more closely related genetically to polar bears than to other brown bears."¹⁵ Please demonstrate to us how the viability of these bears is protected, not as a member of the general population of all

1-7

¹⁰ Ibid, page 21.

¹¹ Finger Mountain Timber Sale(s), Chapter 3, page 30.

¹² Tongass Land Management Plan Revision, Final Environmental Impact Statement. USDA, Forest Service, R10-MB-338c. Appendix, Volume 1. January, 1997. Page K-130.

¹³ Finger Mountain Timber Sale(s), Chapter 3, page 30.

¹⁴ Ibid, Chapter 3, page 30.

¹⁵ Brown Bears of Unit 4: Past, Present and Future: A Status Report and Issues Paper. Alaska Department of Fish and Game, Division of Wildlife Conservation. July, 1998. Page 6.

brown bears in Southeast Alaska, but as a distinct species found only on those three islands, and taking into account the potential effects of future logging in other areas on the same three islands. The only discussion in the Draft EIS about the effects of continued sport hunting of these animals is this: "The increased access [by roads] could result in more bears killed by hunters and poachers."¹⁶ Please demonstrate to us--considering the cumulative and combined threats from road building, habitat fragmentation and hunting--how the viability of these bears is protected.

4-8

There is no indication that systematic surveys were done, in conjunction with ADF&G, to identify sites where 500' stream buffers should be implemented.

tundra vole

The Draft EIS does not mention the endemic subspecies of the tundra vole, *Microtus oeconomus sikhensis*, sometimes called the Alexander Archipelago tundra vole, or the ermine, *Mustela erminea milits*. These vole¹⁷ and ermine¹⁸ subspecies have been found only on Baranof and Chichagof islands. Also not mentioned in the Draft EIS is the endemic subspecies of Keen's mouse, *Peromyscus keeni sikhensis*. Please describe all actions taken by the Forest Service to determine the status of these subspecies. Please explain how the distribution and population status of these three subspecies will be effected by each of the action alternatives.

1-7

Impacts of road density

When discussing the Marten and road density in the project area, the Draft EIS presents misleading figures. The EIS states that "[c]urrently in the project area, there are 17 miles of roads, at a density of 0.1 miles per square mile," and presents this figure of road density in Table "Wildlife-4."¹⁹ The limited discussion of "mitigation" also uses this same figure for road density.²⁰ In fact, the figure of 0.1 miles per square mile is an average density, which fails to consider that the density in several VCUs (230, 233, and 234) is much higher, and that most of the proposed logging will take place in these same VCU's (all of the logging in action alternatives B and D will take place in VCU 230, 233, and 234, while alternative F has logging only in VCU 233 and 234). The EIS states that "after project completion" the road densities will fall; however, it appears that the new figures are again averages for the entire project area, rather than individual VCU's. It is our opinion that the EIS fails to adequately consider the effects of road building on fragmentation, connectivity, and endemic species. Please demonstrate and quantify the effects of road building, fragmentation, and loss of connectivity on wildlife, especially endemic species, based on the actual road densities, in the VCU's affected.

1-7

Conclusion

After considering:

- 1) the amount of fragmentation and loss of connectivity that has occurred on Southeast Chichagof;

¹⁶ Finger Mountain Timber Sale(s), Chapter 3, page 22.

¹⁷ North American Rodents: Status Survey and Conservation Action Plan. Compiled and edited by David J. Hattner, et al. IUCN. 1998. Page 98.

¹⁸ The Mammal Fauna of Southeast Alaska, page 68.

¹⁹ Finger Mountain Timber Sale(s), Chapter 3, page 21.

²⁰ Ibid, Chapter 3, page 25.

- 2) the threats to wildlife viability resulting from the fragmentation and loss of connectivity;
- 3) the failure of the EIS to consider endemic species;
- 4) the speculative protections provided for wildlife in all of the action alternatives;
- 5) the failure of the EIS to consider cumulative effects;

It is clear that Alternative A is the only alternative which can adequately protect species viability and diversity.

Process/Procedural Issues

- ◆ Impacts to subsistence resources will be more significant than admitted, and subsistence hearings should have been held.
- ◆ We are concerned that few of the comments or requests made in the Department of Fish and Game, Habitat Division, revised scoping comments of June 1999 have been acknowledged or appear to be included in the DEIS.
- ◆ We believe available data should be made more apparent in the EIS. High quality habitat is not shown in relation to the units. From our review of the unit cards it is not apparent whether the "none" entry indicates no data, no visit by specialist to the field, or no concerns. Analyses are sometimes based on productive old growth acreages, rather than separation of old growth wildlife quality.
- ◆ The Draft EIS is not a stand alone document containing all the information necessary for the public to fully analyze or understand the proposed actions and their consequences. The DEIS refers to many documents and analyses. Pertinent information from these documents should have been summarized in the EIS.

These comments were prepared by the following SCS members, volunteers and staff: Don Muller, Caleb Wardlaugh, Bob Ellis, Page Elise, and Brian McNitt. Thank you for your attention to our comments. We look forward to an improved FEIS.

Sincerely,

Brian McNitt

Brian McNitt, Executive Director
For the SCS Board

References:

The following 3 authors are cited from conference proceedings given below.
Benda, Lee. 1997.
Johnson, Adelaide. 1997.
Wilpfl, Mark. 1997.
Conference Proceedings. From the Mountains to the Sea: Linked Ecosystems. Headwater Stream Session. 1997 Alaska Chapter AFS Annual Meeting. 84 pp. Box 2218-04, Anchorage, AK, 01804

Appendix A. SCS Analysis of Impact of Harvest Upon Habitat

We used ArcInfo software to intersect the Forest Service dataset deerhab98 (in-cover) with the intersect cover 'units' with the poly option. This created a dataset which had all unit information as well as deer habitat information within units. Then we selected within this cover all units from altb and summarized the deerhab. We compared that total acreage to the deer habitat available within the harvested watersheds. AltB would harvest approximately 1/4 of the high value deer habitat within those watersheds. (We have not yet corrected this analysis for selective logging units but it should not take change the percentage significantly since AltB relies predominantly on clearcutting and clearcutting with reserves.)

We used the same procedure for marlin habitat.

Appendix B. Discrepancies between the first and last versions of the S.E. Chichagof Landscape Analysis.

In previous analysis of Finger Mtn SCS has used as background information the Southeast Chichagof Landscape Analysis which we obtained in 1998. The copy states in Table 4-15 and the text above the table state that marlin habitat was reduced in 17 of the 21 VCU's in the study area. "The 47.1% reduction by 1996 was due to timber harvest and road construction". (p.38 Chapter 4) Approximately 6% of the decrease from 1956 was due to the actual harvest of timber while the remaining reduction is due to road construction. "Optimum habitat use occurs when patches of preferred habitat are greater than 180 acres." The version of the Chichagof Landscape Analysis published in November 1999 states that there was a 11% reduction by 1997 due to timber harvest and road construction. Given the long hiatus in activity on publication of the last version, our instinct is to believe the first version is more accurate.

1-9

US Forest Service:

I am against any more logging in Crab Bay. Please take No Action on this sale. Deer habitat is too important to be harmed in the manner proposed by your sale. I am in favor of No Action on the Finger Mountain Sale. 1-7

Daniel Sever
1706 Edgcombe
Sitka, AK 99835

2/24/2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Dear Mr Franzel,

All the proposed logging of Finger Mountain timber sale is in the Tenakee Inlet; at Crab Bay, In-between Creek and the watershed west of In-between Creek near Little Seal Bay.

We and many others enjoy visiting Tenakee Springs and the area for hunting, fishing or recreation. The long term impacts of this proposed logging, and past sales, and sales on the planning board must be considered. 11-1

We feel it would ruin much of the best areas left, destroy any chance of a sustainable timber industry, and harm the community of Tenakee Springs. 8-2

We are very opposed to this needless logging and road building.

Sincerely yours,

Doris G. Smith

Doris G. Smith
3407 Halibut Point Road
Sitka, AK 99835

7/22/2000

Dear Forest Service
and Mr. Frangel,

Having been a resident of Southeast Alaska
and a visitor to the vicinity of the Finger
Mountain timber sale, I am aware of the beauty
and pristine quality of the environment in this area.
The clearcuts, drainage impacts, and overall ³⁻²
noise and activity would severely compromise
these qualities. It would have an adverse effect on
hunting and fishing activities (Many need these to ²⁻¹
survive) and tourism. Please consider this ³⁻³
as I am in favor of alternative "4" No Action.

I thank you,

Sincerely,

Ray C. Speth

1. THE DEIS FAILS TO FOLLOW THE DIRECTION OF THE 1999 TLMF ROD REGARDING "COLLABORATIVE STEWARDSHIP," IN VIOLATION OF NEMA.

In signing the 1999 TLMF Appeals decision ROD, Under Secretary Jim Lyons reinforced the direction in the 1997 TLMF ROD regarding "Collaborative Stewardship." In the 1999 ROD, Under Secretary Lyons states:

"As part of implementation of the Modified 1997 Forest Plan, the Forest Supervisor, Assistant Forest Supervisors, and District Rangers will increase their efforts in collaborative stewardship within the communities of Southeast Alaska. Collaborative stewardship means bringing people together to share in the decisionmaking in implementing the direction of the Modified 1997 Forest Plan.

The Modified 1997 Forest Plan land use allocations and direction have some flexibility. Interaction among interested people can lead to mutually acceptable resolution of resource use issues. I am hopeful that such interaction and participation will lead to better knowledge of forest activity and fewer appeals and cases of litigation.

The Forest Service recognizes that the success of collaborative stewardship will depend on shared commitment by all involved parties, including the State and other Federal agencies. The agency will do its best to provide the opportunities for collaborative stewardship throughout Southeast Alaska and welcome everyone's participation in this cooperative program."

1999 TLMF ROD at 64-65 (emphasis added).

Unfortunately, the Forest Service has ignored the lofty aspirations outlined in the TLMF ROD and has given up the chance for collaborative stewardship with the community of Tenakee Springs. Tenakee Springs community members worked together to develop a grassroots alternative for the sale, called the CCC Alternative. The CCC Alternative responds to the Purpose and Need for the proposed sale and is within the scope of the project. This alternative would have used existing roads and minimal construction of temporary spur roads in Crab Bay / Fog Creek to log timber using selection logging methods. A total of 3.7 million board feet would have been made available for small sales for value-added wood products manufacturers. The Forest Service took one page in the DEIS to describe this alternative and dismiss it from its analysis. In so doing, the Forest Service passed up an excellent opportunity to collaborate with the community of Tenakee Springs.

The Forest Service states in the DEIS that "[t]his alternative was not considered in detail because the issues that it addressed were already included in other alternatives." DEIS at 2-9. While we strongly disagree with this statement on a factual basis, it also completely misses the point. The point of the CCC Alternative was to involve local citizens in the development of a timber sale that responded to local concerns and issues. To be frank, the Forest Service has made little, if any, progress to increase its efforts in collaborative stewardship within the community of Tenakee Springs. Instead of "bringing people together to share in the decisionmaking in implementing the direction of the Modified 1997 Forest Plan," the Forest Service has simply continued to conduct pro forma meetings in Tenakee Springs in which the agency tells the public what it wants to do and then listens to the angry public disagree with its proposals. Instead of providing for "interaction among interested people, "which" can lead to mutually acceptable

Southeast Alaska Conservation Council

SEACC 419 6th Street, Suite 328, Juneau, AK 99801
(907) 463-3312 fax
(907) 586-6942 phone
info@seacc.org

February 28, 2000



Jan Franzel, District Ranger
USDA Forest Service
Tongass National Forest, Sitka Ranger District
204 Siegmund Way
Sitka, AK 99835
email: franzelr10_chatham@fs.fed.us

SENT VIA EMAIL & FAX

Re: Comments on Finger Mountain Timber Sale(s) DEIS

Dear Mr. Franzel:

The following comments are submitted on behalf of the Southeast Alaska Conservation Council (SEACC) on the Finger Mountain Timber Sale(s) Draft Environmental Impact Statement (DEIS).

SEACC is a coalition of eighteen volunteer conservation groups in fourteen communities across Southeast Alaska, from Yakutat to Ketchikan, including the Chichagof Conservation Council (CCC). SEACC's individual members include Alaska Natives, subsistence users, commercial and sport fishermen, hunters and guides, tourism and recreation business owners, small timber operators and high value-added wood product manufacturers, as well as concerned citizens from all walks of life. SEACC is dedicated to safeguarding the integrity of Southeast Alaska's unsurpassed natural environment while providing for balanced, sustainable use of our region's resources.

After over two and a half years of project planning, the Forest Service has produced a document with little substantive analysis. This is particularly disappointing given the amount of past fieldwork done in the area for the Southeast Chichagof EIS and the work done to produce the Southeast Chichagof Landscape Analysis. Without substantive analysis of the social, economic, and environmental effects of the proposed sale, the public and decisionmakers lack a clear basis for deciding the merits (or demerits) of the sale.

We are also extremely disappointed with the quick dismissal of the CCC Alternative. This alternative was developed by local Tenakee residents to constructively respond to the Forest Service's desire to plan a timber sale in the area and to their own needs as a community. We had thought that the 1997 TLMF ROD had ushered in a new era of "collaborative stewardship" on the Tongass, in which the Forest Service would take the time to work with local residents regarding land management activities on the Tongass. The brief description and quick dismissal of the CCC Alternative in the DEIS makes a mockery of the Forest Service's "collaborative stewardship" program.

LYNN CANAL CONSERVATION BOARD • FRIENDS OF GLACIER JAY COWAN • FRIENDS OF BERNERS BAY JASON
WAKANGALL RESOURCE COUNCIL • PALMIRA SOCIETY • TONGASS NATIONAL FOREST • TONGASS CONSERVATION SOCIETY • KACHIK
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inadequate description of the effects of the timber sale on roadless areas. The DEIS states "[n]one of the action alternatives would affect the ability of this Roadless Area [Chichagof Roadless Area] to be considered for Wilderness designation at a later time." This statement is misleading and fails to fully describe the effects of the various alternatives on the Chichagof Roadless Area. 11-14

In reality, all action alternatives would require roadbuilding and logging in the Chichagof Roadless Area. All action alternatives would therefore reduce the Wilderness quality of those lands within the Chichagof Roadless Area in which development activities are planned. Accordingly, all action alternatives would reduce the likelihood of those lands from ever being considered for Wilderness designation by Congress. In order to recognize the value of the area's roadless lands and to comply with the letter and spirit of NEPA, the EIS needs to accurately disclose and evaluate the effects of each alternative on the Chichagof Roadless Area.

III. THE DEIS FAILS TO ADEQUATELY PROTECT BROWN BEAR POPULATIONS.

A key finding of TLMP's brown bear risk assessment panel was that

"an undisturbed buffer (no harvest, no roads) along salmon-bearing streams where bears concentrate and feed helps to maintain brown bear habitat. Such buffers provide some isolation of bear feeding sites from humans and other bears. The panel identified 500 feet (153 m) along each side of salmon-bearing streams as an appropriate buffer width."

Swanson et al. 1996:9.

Unfortunately, the Forest Service weakened the suggestions of the panel and changed the burden of proof in TLMP. The Forest Plan requires that the Forest Service "evaluate the need for additional protection of important brown bear foraging sites" and "[e]stablish forested buffers, where available, of approximately 500 feet from the stream at sites where, based upon the evaluation, additional protective measures are needed..." Forest Plan at 4-114, WILD 1:2VIB. The Forest Plan also required that the Forest Service "[c]onsult with the Alaska Department of Fish and Game in identifying and managing important brown bear foraging sites." *Id.*

Recent studies by ADF&G show that "risk to brown bears will increase should this buffer only be applied in a few areas." This study also found that "[b]ecause of the high brown bear density on our study area and across all of Baranof and Chichagof Islands that are available for timber harvest, we believe that nearly all of the salmon spawning streams are important for brown bears." *Id.*

However, the DEIS fails to fully describe how the Forest Service is following the guidelines provided in the Forest Plan. There are a total of eight salmon streams in the area, which provide a total of 89 miles of anadromous fish habitat. DEIS at 3-42. Logging and roadbuilding are planned along four of these streams in the action alternatives. Given the presence of brown bears in the area, we must assume that at least part of these streams provide foraging areas for brown bear. The agency must fully disclose the location of these foraging areas and evaluate the effects of the

¹ Titus, Kimberly, and Laverne Beier, Alaska Department of Fish and Game, "Suitability of Stream Buffers and Riparian Habitats for Brown Bears" (April 9, 1999)(attached).

resolution of resource use issues," the Forest Service has continued its age-old methods of top-down land management planning. It is no wonder that local citizens recently filed an appeal of the Indian River FEIS and ROD. If the Forest Service continues to ignore local efforts to share in the decisionmaking in implementing TLMP, the agency will more than likely face an appeal of this sale, as well.

The Forest Service's claim that the issues addressed in the CCC Alternative were already included in other alternatives is completely without merit. The agency contends that Alternative F addresses the concerns over bear impacts since it only builds 4 miles of temporary road. Alternative F, however, fails to minimize impacts on brown bears because it fails to include any 500-foot buffers along important bear foraging areas. Alternative F does not address the needs of small sale opportunities, as well. In addition, Alternative F fails to minimize impacts to wetlands to the extent of the CCC Alternative.

Alternative CCC would have required only minimal spur road construction, less than 1/4 mile long in each case. There is a big difference between the construction of short spur roads and the construction of approximately 2 miles of temporary road up Fog Creek in Alternative F. The Forest Service needs to evaluate the ability of small operators to build 2 miles of road as compared to their ability to build short spur roads. It seems that Alternative F fails to provide as many opportunities for small timber sales as the CCC Alternative. The Forest Service somehow makes the claim that "[a]lternatives were designed with the possibility for small sale opportunities." DEIS at 2-9. This statement ignores the fact that high road construction costs deter involvement in timber sales from small operators. Later in the DEIS, the Forest Service states that "[i]f new road construction is required, there needs to be enough volume and value in the larger sale to pay for road construction..." DEIS at 3-59. Obviously, there is a direct relationship with the amount of new roads needed for a sale and the cost to the timber purchaser. High costs of road construction may drive out the smaller operator. Thus, the Forest Service's claim that all alternatives have the possibility for small sale opportunities fails to describe the real impact of each sale on small sales opportunities. Furthermore, the agency lacks a reasonable basis for claiming that any action alternative considered in the DEIS addresses the significant issue of small sales opportunities to the extent to which the CCC alternative does, given the fact that the CCC Alternative was specifically designed to provide only small sales opportunities.

II. THE DEIS FAILS TO DISCLOSE AND EVALUATE IMPACTS ON ROADLESS AREAS, IN VIOLATION OF NEPA.

On October 14, 1999, President Bill Clinton announced the start of a nationwide process to consider protecting National Forest roadless areas. In the scoping notice for the EIS process, the Forest Service specifically asked the public whether or not the Tongass National Forest should be included in the roadless policy. A Draft EIS on this policy is scheduled to be released this spring, with a Final EIS and ROD due out by the end of the year.

Given the national attention paid to the value of roadless areas, it is a gross oversight for the Forest Service to overlook the value of roadless areas in timber sale EISs such as the Finger Mountain EIS. In the DEIS, the Forest Service takes one brief paragraph to offer a completely

V. THE DEIS FAILS TO ADEQUATELY DISCLOSE AND EVALUATE THE EFFECTS OF LOGGING AND ROADBUILDING ON HIGH AND EXTREME HAZARD SOILS, IN VIOLATION OF NEPA AND NFMA.

The DEIS reveals that all action alternatives would require logging on at least 300 acres and between 2 and 7 miles of new roads on high and extreme hazard soils (MMHAZ 3 and MMHAZ 4, respectively). DEIS 3-40. Of the 98 landslides that occurred between 1962 and 1976 in the Southeast Chichagof area, 41 percent occurred in MMHAZ 4 areas and 44 percent in MMHAZ 3 areas. SE Chichagof at 4-49. There is also evidence to indicate that logging and roadbuilding increase the probability of landslides. The rate of slides in managed ground is 1.8 m³/km²/yr compared to 1.7 m³/km²/yr for all of Southeast Alaska. *Id.* at 4-49. Additionally, logging and roadbuilding "can increase surface erosion by removing the vegetation cover, disturbing the surface soil layers, and creating new erosional surfaces such as roads and road banks." *Id.* at 4-49. Such erosion can damage salmon habitat: "[i]ncreases in fine sediment delivered to streams from these sources can reduce viability of eggs and emerging fry in spawning gravels." *Id.* at 4-50.

However, the DEIS states that "[w]ith proper application of the Best Management Practices (BMPs) and standards and guidelines, none of the proposed alternatives would lead to significant direct, indirect, or cumulative impacts" of sedimentation. DEIS at 3-41. The Forest Service lacks a reasonable basis for making this claim. No data or analysis is presented in the DEIS to show that current BMPs are sufficient to prevent increased sedimentation due to the planned clearcuts and roads.

The Forest Plan requires that the agency "[e]valuate soil stability, potential soil mass wasting effects, and stability of class IV channel systems." Forest Plan at 4-84, S&W 1121A5. The DEIS fails to provide any meaningful analysis to comply with this standard and guideline. The only mention of such an analysis is found on page 3-41: "[p]ossible exceptions to this general observation [from a study of Indian River] include localized, short-term sedimentation caused by construction of road drainage structures, minor road washouts, and some small-scale mass wasting events." DEIS 3-41. The DEIS fails, however, to give the public and decisionmakers a clear estimate of the likelihood of such events. The DEIS fails to comply with the Forest Plan, in violation of NFMA, and fails to comply with NEPA.

In addition, the probability of localized, short-term sedimentation events violates Alaska's anti-degradation policy. See XI, below. Before allowing management activities that create lower water quality, the Forest Service must show that "allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located" and that "the resulting water quality will be adequate to protect existing uses." See 18 AAC 70.01.3(a)(2)(A)&(C). The DEIS fails to provide sufficient information and analysis to support these required findings.

The Forest Plan also requires that the Forest Service "[a]void locating a road on a slope greater than 67%, on an unstable slope, or in a slide-prone area, where feasible." Forest Plan at 4-84, S&W 1121A6. The DEIS reveals that all action alternatives require roadbuilding on high hazard soils. These soils may represent unstable slopes, slide-prone areas, or slopes greater than 67%. The

various action alternatives on these sites. According to an August 7, 1998 memo from Brad Powell to Tongass Leadership entitled "Tongass Forest Plan Implementation Clarification Papers," the Forest Service must follow a set protocol to use site-specific information to evaluate the need for brown bear buffers. Nothing in the document shows that this evaluation has been completed. Instead of providing a detailed analysis as required by the Forest Plan and NEPA, the DEIS simply states that "[t]he riparian standards and guidelines, in combination with unit placement, alleviated the need to add additional buffers for bear feeding areas." DEIS at 3-21. In order to comply with the letter and the spirit of NEPA, the Forest Service must fully disclose and evaluate the effects of the action alternatives on bear feeding areas, including how much logging and roadbuilding is planned within the 500 foot recommended buffer along salmon streams. Printing ADF & G's recommendations regarding bear buffers in the DEIS would also give the public and decisionmakers a better understanding of the potential effects of the proposed timber sale on brown bears.

IV. THE DEIS FAILS TO ADEQUATELY DISCLOSE AND EVALUATE THE EFFECTS OF ROADS ON FISH POPULATIONS, IN VIOLATION OF NEPA.

The DEIS admits that "[r]oad construction has the potential to affect upstream fish passage through improper placement or sizing of culverts." DEIS at 3-46. Indeed, recent agency studies reveal that culvert problems exist on across the Tongass National Forest. See footnote 2, below. Additionally, the Southeast Chichagof Landscape Analysis indicates that 22% to 43% of culverts surveyed in 1995 in the Corner Bay area had perched outlets. Southeast Chichagof Landscape Analysis (hereinafter Landscape Analysis) at 4-52. The DEIS fails to reveal this information from a nearby road system and fails to disclose the status of the current road system in the project area. All roads in the project area have been decommissioned, except for the Inbetween Creek roads. The DEIS reveals that "[i]n road drainage structure inventory was completed for Inbetween Creek where structures remain in place on mainline roads." *Id.*

It is important to know the status of the current road system and its drainage structures before planning more road crossings and placement of culverts. Without knowing this crucial information, the Forest Service is unable to fully estimate the potential effects on fish populations due to the proposed timber sale. The DEIS states that "[q]uantifiable effects on fish resources from road construction and use are not expected with application of Best Management Practices." DEIS at 3-46. But the Forest Service lacks a reasonable basis for determining that BMPs are effective in guaranteeing fish passage through culverts. Forest Service studies have already shown the inability of a large part of existing culverts to pass fish. Given the large number of stream crossings required by this sale (83 total fish stream crossings and 35 salmon stream crossings for the Preferred Alternative) and the current information showing widespread culvert blockages across the Forest, we must assume that the proposed sale poses a risk to fish populations. The Forest Service must fully disclose and evaluate the potential effects of roads on fish populations by revealing the status of the existing road system and demonstrating how the application of BMPs will truly guarantee passage of salmon and trout at all flows.

DEIS fails to provide adequate information, however, to show how much roads are planned for these areas. The road cards reveal that at least one road, road 7605, "descend via a double switchback through a very steep area." DEIS, Road Card for Road 7605. But the DEIS fails to even mention the slope gradient for this section of road. By failing to provide adequate information, the DEIS makes it impossible to determine whether or not the Forest Service is complying with the Forest Plan. The Forest Service must adequately disclose and evaluate the amount of proposed roads on slopes greater than 67%, on unstable soils, or in slide-prone areas to comply with the Forest Plan. If the proposed roads to cross these areas, the Forest Service must show why other alternatives, such as alternative road placement or helicopter transfer, are not feasible.

VI. THE DEIS FAILS TO FULLY DISCLOSE AND EVALUATE THE TIMBER SALE'S SOCIOECONOMIC EFFECTS ON THE COMMUNITY OF TENAKEE SPRINGS.

Tenakee Springs relies heavily on the natural environment surrounding the community. Tenakee residents harvest subsistence resources in Tenakee Inlet, operate commercial fishing and tourism businesses in the Inlet, and seek recreational opportunities there. The project area is one part of Tenakee Inlet heavily used by Tenakee residents. Besides providing all the resources listed above, the project area serves as a viewshed for much of the community. The Forest Service's activities in the proposed sale will have a direct impact on the view out people's kitchen windows. However, the DEIS fails to fully describe the importance of the project area to the social and economic well-being of Tenakee Springs and the potential impacts due to the proposed sale.

Constanza et al. (1997) estimated the value of temperate/boreal forests, in terms of ecosystem services, to be \$302 per hectare per year. While this value may differ for forestlands in Tenakee Inlet, it's probably considerable, and the Forest Service fails to account for the correct value. Clear-cutting and similar logging methods will reduce the ecosystem value of the relevant piece of land by a substantial margin. As externalities, such costs will lead to the market failure described above. The Forest Service needs to include the value of these ecosystem services and the potential impacts on these values due to the action alternatives.

A. The DEIS's benefit-cost analysis fails to include some important costs related to the proposed timber sale.

NEPA required that an EIS fully disclose the "relevant social, economic and environmental factors" pertaining to the proposed action. See *Daily v. Volpe* 376 F. Supp. 987, 995 (WD Wash. 1974), aff'd 514 F.2d 1106 (9th Cir. 1975). The balancing of the environmental costs of a project against its economic and technological benefits is mandated by NEPA. 42 U.S.C. ss 4332(2)(B); *Calvert Cliffs' Coord. Com. v. U.S. Atomic Energy Com'n*, 449 F.2d 1109, 1113 (D.C. Cir. 1971) ("NEPA mandates a rather finely tuned and 'systematic' balancing analysis."). Although NEPA does not require a formal and quantified cost-benefit analysis under all circumstances, once the Forest Service decided to promote the economic benefits associated with building permanent roads and logging in the Finger Mountain project area, it was required to fully and objectively disclose and analyze the costs associated with doing so. See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983).

While the "Economic Efficiency Summary" provides some useful information, it still fails to describe all the potential socioeconomic effects due to the proposed sale. For instance, the analysis fails to consider opportunity costs to a future local value-added wood products industry. The DEIS states that "those communities with processing facilities and current employment in the wood products industry are most likely to be benefited by this project." See DEIS at 3-106. Such facilities and employment opportunities do not fully exist in Tenakee Springs. Because there is potential for a small-scale wood products industry to develop over the course of the next few decades, the proposed action alternatives represent an opportunity cost with regard to this new industry. The accelerated removal of mature trees over the next 3-5 years will result in the foregone opportunity for the development of a new, local, post-harvest processing industry. The Forest Service needs to account for this opportunity cost.

B. The Forest Service fails to consider the socioeconomic effects of reduced sport and subsistence hunting opportunities.

Subsistence deer hunting is an important part of Tenakee Springs's economy. Tenakee residents harvest an average of 23 deer per year in WAA 3629, or 31.9 percent of their total deer harvest. DEIS at 3-100. The DEIS states that "[d]eclines in deer habitat capability are measurable and will occur under all action alternatives." DEIS at 3-101. The DEIS also admits that the cumulative effects of past, present, and reasonably foreseeable timber sales in the project area will cause hunter demand to reach 16.4 percent of habitat capability after 100 years of full implementation of the Forest Plan. *Id.* Obviously, this timber sale, as well as future timber sales will reduce the area's value for subsistence resources. No analysis is shown regarding the impacts of such reductions on the economy of Tenakee Springs. The FEIS for the Indian River Timber Sale states that Tenakee Springs depends on commercial fishing and subsistence (Indian River FEIS 4-79). Given the economic and social importance of subsistence to the community of Tenakee Springs, the Forest Service must adequately disclose and evaluate the social and economic impact due to reduced subsistence deer hunting opportunities in the project area.

Similarly, Tenakee Springs derives economic benefit from sport and subsistence hunters who travel to Tenakee in the fall for hunting opportunities. Out-of-town hunters rent cabins, buy meals and groceries, and purchase fuel in Tenakee. The DEIS fails to provide any detailed information on the amount of deer taken in the project area by out-of-town hunters. Regardless, it is known that out-of-town hunters do use the project area for deer hunting. The DEIS reveals that implementation of the Forest Plan may cause hunter demand to reach 16.4 percent of habitat capability. The DEIS also states that by the year 2095 "the subsistence priority for deer hunting in these WAAs may be in effect." DEIS at 3-102. Obviously, deer hunting in the Finger Mountain project area will experience declines in the future, leading to less hunter success, and possibly leading to less visitation by hunters in Tenakee Springs. The DEIS fails to disclose and evaluate the subsequent socioeconomic effects on the community.

The possibility of contemporaneous logging in the Finger Mountain and Indian River project areas may also cause socioeconomic impacts relating to sport and subsistence deer hunting. Logging activities will basically make these areas off-limits to deer hunting for large portions of the deer season. Hunting activities will have to focus on other areas of Tenakee Inlet, increasing hunter

E. The DEIS fails to include all relevant information regarding the production of direct and indirect jobs.

The DEIS states that "Tenakee Springs and Sika may not benefit directly, but it likely that some of the indirect employment and income impacts will occur in these communities. The Forest Service lacks a reasonable basis for making this claim. A recent study calls into question: 'the common assumption that a positive relation between timber employment and other employment necessarily exists at smaller spatial scale.'² In the past, much has been made by industry boosters and the Forest Service regarding the existence of a job 'multiplier' in Southeast Alaska communities. This study, however, found that 'this analysis provides no evidence for the existence of a positive linear employment impact multiplier in the communities of Southeast Alaska.' Id. In fact, in some cases, this study found that many Southeast Alaska communities may have a negative multiplier. It is quite possible that Tenakee Springs has a negative multiplier, since the nearby community of Hoonah (which is more heavily dependent on logging than Tenakee Springs) was found to have a negative multiplier of -.03. Id. at 131. The Forest Service must consider this new information in assessing the proposed timber sale's potential impacts on local job production. 7-4

VII. THE DEIS FAILS TO JUSTIFY EVEN AGED CUTTING METHODS REQUIRED BY THE PREFERRED ALTERNATIVE

Throughout the TLMP planning process, the Forest Service heard from expert wildlife panels that clear cutting was inconsistent with the protection of old growth dependent wildlife species on the Tongass. The original V-POP committee (Suring, et al., 1993), and the Peer Review of that work, both recognized the severe problems posed by clear cutting for a variety of species on the Tongass. The Peer Review report recommended specifically that the Tongass convert to logging techniques that mimic dominant natural disturbance regimes (Klister & Eckhardt, 1994, pp. 31, 109-110). Other expert panels convened by the Forest Service during the later stages of the planning process reiterated that clear cutting was harmful to wildlife and that selection logging method would reduce the impact. See Coghill, 1994; Iverson, et al., 1996c, p. 70; Person, et al., 1996, p. 22; Julin, 1997, p. 7; Iverson 1. Finally, a group of the former peer reviewers, examining the completed TLMP concluded "[c]ontinued large scale clear-cutting, particularly on a short rotation as called for in the plan, is incompatible with ensuring adequate protection of wildlife and established habitat." Powell et al., 1997, p. 9. If the Forest Service is to meet legal and stewardship standards for Tongass wildlife, the report continued, it "must begin requiring some form of selection logging as the dominant logging method on the Tongass." 9-1

The DEIS attempts to justify the Preferred Alternative's use of clearcutting or similar even-aged cutting methods (clearcut with reserves) in over 99 percent of the acres planned for logging. See DEIS at 2-11. The timber standards and guidelines adopted in the revised TLMP include direction to "[u]se clear-cutting only where such a practice is determined to be the best system to meet the objectives and requirements of Land Use Designations." See TTM114.III.B.1. According

² Robertson, Guy, "Employment Impact Multipliers and the Economic Role of Timber in the Small Forest Communities of Southeast Alaska," as printed in *Global Concerns for Forest Resource Utilization*, Kluwer Academic Publishers, p. 134, (1998) (attached).

demand in those areas and reducing success rates. Word may spread that Tenakee Inlet is no longer an attractive destination for out of town hunters, and less hunters may visit Tenakee Springs, as a result. The Forest Service must disclose and evaluate these potential cumulative socioeconomic effects.

C. The Forest Service fails to adequately consider the socioeconomic effects of noise on residents and visitors of the City of Tenakee Springs.

"Noise" is presented in the DEIS as simply a function of the amount of timber logged in the sale with helicopter. The DEIS fails to account for noise created by road construction and logging activities. Sound travels well over the water, especially on calm days. It is quite possible that logging and roadbuilding activities create noise that will travel across the Inlet and disturb Tenakee residents and visitors. Under the Forest Service's model, the Preferred Alternative seems to not create any noise impact on the community of Tenakee Springs. The agency must give a realistic estimate of the noise created under each. Noise should be related to dB measurements and a determination made as to what levels particular people may experience. "Noise" constancy issues need to be addressed. It is not just the noise level but also the duration that a person is exposed to the noise that is of importance. "Noise" problems in relation to specific groups exposed to the noise should be addressed as to specific group and specific locations affected.

D. The Forest Service fails to disclose and evaluate the cumulative socioeconomic effects of past, present, and reasonable foreseeable timber sales on Tenakee Springs.

NEPA requires that "[c]umulative actions, which when viewed with either proposed actions have cumulatively significant impacts... should therefore be discussed in the same impact statement." See 40 C.F.R. 1508.25(a)(2). NEPA also contemplates "similar actions," which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." 40 C.F.R. § 1508.25(a)(3). Because both the Indian River and Finger Mountain sales will occur over the next 3-5 years and both sales are located in Tenakee Inlet, they share common timing and geography. NEPA states that the agency should analyze such similar actions within the same EIS, "when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement." 40 C.F.R. § 1508.25 (3). Little mention is made in the DEIS about the cumulative socioeconomic impacts of both the Indian River Timber Sale and the Finger Mountain Timber Sale on the community of Tenakee Springs, even though these timber sales may happen simultaneously or sequentially. The DEIS does discuss the cumulative impacts of both sales on recreation and tourism activities in Tenakee Inlet. See DEIS at 3-83. However, the document fails to describe the effects that both sales will have on the social and economic fabric of Tenakee Springs. What will the impacts be from multiple log rafting activities in Tenakee Inlet? What impact will the cumulative noise levels have on Tenakee Springs? What are the cumulative effects on subsistence and sport hunting? These and other cumulative impacts must be fully disclosed and evaluated by the Forest Service in the same EIS. 11-1

VIII THE DEIS FAILS TO ADEQUATELY DISCLOSE AND EVALUATE THE IMPACTS DUE TO LOG DUMPING.

Action alternatives in the DEIS will require the operation of up to two logs in Tenakee Inlet. These log dumps have the potential to negatively impact the marine environment and the many human uses dependent on marine resources. In particular, the Crab Bay log dump site is at the heart of an important herring spawning site in Tenakee Inlet. Besides providing for commercial fishery values, herring serve as the basis for the diets of many species in the Inlet, from salmon to sea lions to humpback whales. Any impacts absorbed by the herring population will produce effects in large parts of the marine ecosystem. Unfortunately, the Forest Service fails to take the necessary hard look at these resources and the potential for negative impacts on them due to the construction and operation of log dumps in Tenakee Inlet.

For instance, the discussion of the proposed log dump sites fails to provide site-specific information on the bathymetry of the sites, flushing capabilities, current biological productivity and species diversity at the sites, or the amount and extent of bark deposition from previous log dumping. The agency also fails to give detailed information regarding the Crab Bay herring spawning site. According to ADF&G, the Crab Bay log dump site had the highest concentrations and greatest abundance of herring eggs of any sites surveyed in 1996. See memo from Andy McGregor to Lisa Weissler, (September 23, 1996)(attached). ADF&G recommended a complete suspension of log dumping activities between April 15 and June 15. Id. Unfortunately, the Forest Service fails to describe ADF&G's recommendations and proposes a timing restriction that is much smaller than ADF&G's. The Forest Service also fails to describe the potential negative effects due to hydrocarbon spills on herring populations. Even small spills of hydrocarbons have been shown to have negative effects on herring populations. The Forest Service should consider banning fuel transfers during the timing window to reduce the risks due to fuel spills.

ATTF guidelines also state that, "[w]here feasible, preference must be given to onshore storage and barging of logs." Forest Plan at G-9. We are happy to see the Forest Service consider a barge capable log dump for the Crab Bay site in Alternative B. However, to comply with ATTF guidelines, the agency must consider barge capable log dumps for all facilities in the project area.

IX. THE DEIS FAILS TO ADEQUATELY DISCLOSE AND EVALUATE THE CUMULATIVE EFFECTS OF PAST, PRESENT, AND REASONABLY FORESEEABLE TIMBER SALES IN TENAKEE INLET.

The DEIS fails to provide the public and decisionmakers an adequate analysis of the cumulative effects due to past, present, and reasonably foreseeable timber sales in Tenakee Inlet. NEPA requires that cumulative actions "which when viewed with other proposed actions have cumulatively significant impacts ... should therefore be discussed in the same impact statement." 40 C.F.R. § 1508.25(a)(3). The Southeast Chichagof Landscape Analysis, for instance, provides excellent information regarding the cumulative effects of past timber sales. Unfortunately, little, if any, of this information was included in the DEIS.

to the DEIS (at 5), the Modified 1997 TLMP allocated approximately 48.6 percent of the project area to the Timber Production LUD, 3 percent of the area is allocated to the Modified Landscape LUD. The remaining 48.4 percent of the project area is allocated to the Old growth Habitat LUD and Semi-Remote Recreation LUDs.

Each of the moderate and intensive development LUDs include the objectives of "seeking to reduce clear cutting," "protecting forest resources," and "improving timber growth and productivity." See TLMP at 3-135 (Modified Landscape Management Prescription and 3-144 (Timber Production Management Prescription). The DEIS, however, never adequately determines that clear cutting and similar even-aged management techniques are "the best system to meet the objectives and requirements of the [LUDs in the Finger Mountain project area]." Because clear cutting and other similar even-aged techniques make up nearly 99 percent of the Preferred Alternative's proposed cutting practices, this alternative can hardly be described as "seeking to reduce clear cutting." Clearcut logging is recognized by the Forest Service's own experts to be harmful to fish, wildlife, subsistence, and other resources of the Tongass. The Forest Service received scientific advice during the TLMP process to use selection-logging methods that better replicate the dominant natural disturbance pattern in the ecosystem. Clear cutting is plainly not the "optimum" method as required by the NEMA, at least for non-timber values. See 16 U.S.C. sec 1604 (g) (3) (F).

The Forest Service states that:

"[I]n this project, we limit clearcutting to areas where it is essential to meet Forest Plan objectives; to minimize the occurrence of disease infestations, windthrow, or logging damage; and to provide for the establishment and growth of desired trees (Sitka spruce in particular) that are shade intolerant. Eliminating clearcutting as a harvest option would severely limit the project's ability to meet Forest Plan objectives. As a result, the issue of clearcutting is beyond the scope of this project."

DEIS at 1-14. The agency lacks a reasonable basis for claiming that clearcutting will minimize the occurrence of disease infestations, windthrow or logging damage, or increase the growth of Sitka spruce. What scientific studies or data proves that these claims are true? The Forest Service then has the audacity to claim that the issue of clearcutting is beyond the scope of this project. How can this be so, if the standards and guidelines of both development LUDs in the project area include the objectives of "seeking to reduce clearcutting?" Clearcutting and the use of alternative silvicultural methods are significant issues and should be closely considered in the proposed sale. According to the 1999 TLMP ROD, "[t]he determination of which harvesting methods to incorporate in a timber sale project will be made considering site-specific information as part of project-level decisionmaking, using the Modified Forest Plan standards and guidelines." 1999 ROD at 8. By employing clearcutting or similar logging methods in 99 percent of the acres planned for logging, the Preferred Alternative fails to meet the objective of "seeking to reduce clearcutting" and therefore fails to comply with the Forest Plan, in violation of NEMA.

For instance, the Landscape Analysis describes the reduction in size of old-growth patches, the reduction in old-growth values, the reduction in core old-growth, and the increase in edge old-growth in the analysis area. The Landscape Analysis concludes that "fragmentation has reduced the amount of effective habitat for wildlife species dependent on old-growth." However, none of this valuable analysis appears in the DEIS. The DEIS simply reports the acreage of productive old-growth present in 1956, and the amount likely to be present in 2056. The DEIS fails to adequately describe the effects of past logging on old-growth blocks and old-growth value. The DEIS lamely concludes that: "[o]ld-growth dependent species would experience reductions in habitat capability; however, for species other than deer, it is not possible to quantify the future effects at this time." DEIS 3-25. Without a more in-depth analysis (a "Landscape Analysis") of the effects of past, present, and reasonably foreseeable effects of timber sales in Tenakee Inlet on old-growth dependent wildlife, the DEIS fails to comply with NEPA.

Another example of the agency's inability to accurately describe cumulative effects is the DEIS's treatment of productive old-growth acres. The DEIS gives all productive old-growth the same level of importance, saying that 83 percent of the productive old-growth in the project area would remain in 2056. Well, as the Forest Service knows, all productive old-growth is not created equal. In the Landscape Analysis, the Forest Service breaks down analysis area into several different landtype associations. In looking at these landtypes and the amount of logging which has occurred on each, the agency found that: "[m]anagement activity has not been equally spread out among the LTAs but has concentrated on the colluvial/alluvial/coastal surfaces, because they were easiest to get to, flatter, and had a higher rate of disturbance, hence more spruce (44% of the old growth has been harvested). Landscape Analysis at 4-15. The agency concludes that "cutting in the past has been disproportionately concentrated of the colluvial/fluvial/coastal and the forested hills landtype association. Biologists agree that these valley bottom and valley sides are the most important habitats for old-growth dependent species. The Forest Service needs to evaluate the cumulative effects of past, present, and reasonably foreseeable logging on the various landtype associations present in the project area. Then, the agency needs to evaluate the subsequent cumulative effects on old-growth dependent wildlife species.

X. THE DEIS FAILS TO ADEQUATELY SHOW THAT THE AGENCY IS EXEMPT FROM SECTION 404 OF THE CLEAN WATER ACT.

Action alternatives in the DEIS propose building between 4 and 21 miles of road. These alternatives would construct between 3.3 and 13.6 miles of roads across wetlands. The DEIS claims that "[a]ll or most of the roads in the Finger Mountain project area are exempt from site-specific COE wetland permitting." DEIS at 3-49. The DEIS fails to provide a basis for this claim, however. The agency may either apply for a Section 404 permit or show that they meet the requirements to be exempt from such a permit. To be exempt from the permit requirements, the agency must show that the proposed activities satisfy the requirements of the 404 exemptions and avoid the exception to the exemptions (also known as the "recapture" provision). *United States v. Alaska*, 785 F.2d 814, 819 (9th Cir. 1986). The Forest Service fails to meet its burden of proof that it is exempt from Section 404 permit requirements.

In order to qualify under the "normal silviculture" exemption, the proposed activities "must be part of an established ... silviculture ... operation..." 33 C.F.R. § 323.4(a)(1)(ii). Alternatives 2 and 3 call for logging and roadbuilding in a currently unlogged, unroaded area. Because these alternatives will bring "an area into silvicultural use" and will "change the use of the land," the Forest Service is not entitled to a Section 404(f)(1)(A) exemption.

To qualify for the "forest roads" exemption, the Forest Service must assure that road building activities are conducted in accordance with Best Management Practices (BMPs). The agency must establish that the BMPs will "assure that flow and circulation patterns and chemical and biological characteristics of the navigable waters are not impaired, that the reach of the navigable waters in not reduced, and that any adverse effect of the aquatic environment will be otherwise minimized." See 33 U.S.C. § 1344(f)(1)(E).

The DEIS claims that "[b]y applying BMPs, impacts of road construction should be limited to the wetland directly underlying the road and adjacent cuts and fills." DEIS at 3-51. Absent from the DEIS, however, is any information or analysis showing that the implementation of these BMPs will assure the maintenance or enhancement of flow, circulation, or reach of navigable waters within the project area, including wetlands. The EIS's unsubstantiated claim that these qualities will be maintained is inadequate. In fact, the Forest Service lacks any credible scientific basis for establishing that agency BMPs will accomplish the statutory requirements that would entitle them to this exemption. For example, according to recent agency documents, "[c]urrently, the Tongass NF does not have an approved method to evaluate the effectiveness of BMPs related to impacts of management activities to wetland functions and values." See Tongass National Forest: Annual Monitoring and Evaluation Report for Fiscal Year 1998 at p. 85 (hereinafter USFS FY98). The report goes on to acknowledge that the agency's evaluation of the effectiveness of the standards and guidelines adopted in the revised Tongass Plan for minimizing impacts to wetlands and their associated functions and values is "inconclusive." *Id.* at 87. Furthermore, agency studies provide documentation of the lack of effectiveness of agency BMPs on every area in the Tongass: Chatham, Stikine, and Ketchikan.³ The DEIS provides no supporting evidence that the agency will fully and properly apply these BMPs, or that these measures will effectively maintain the flow, circulation, or reach of affected waters, if implemented properly.

XI. THE DEIS FAILS TO ADEQUATELY SHOW THAT ALL ALTERNATIVES WILL COMPLY WITH ALASKA'S ANTIDEGRADATION REGULATION.

The Clean Water Act mandates that each state's water quality standards include an antidegradation policy. See 33 U.S.C. §§ 1313(d)(4)(B), (c)(2)(A); §§ 303(d)(4)(B), (c)(2)(A). The United States Supreme Court has also interpreted the Clean Water Act's mandated state water

³ See *Policy & Practice, Fish Passage at Selected Culvert Crossings on the Hoonah Ranger District Road System* (Mar. 23, 1999) ("Of the 19 Class II culvert crossings surveyed, 17 were judged to be partial or complete upstream barriers for resident fish species...."). See also USFS FY98 at 22 (Of 107 stream crossings on Class I streams studies on the Petersburg District, 30% of these culverts are assumed not to allow for the successful passage of fish, about 85% of the culverts on Class II streams are assumed inadequate for fish passage.). See also *Sea Level Timber Sale FEIS* at 3-120 ("Of the [40] stream crossings requiring fish passage, 19 crossings were identified as failing to provide fish passage.")

quality standards to require an anti-degradation policy. See *PUD v. Washington Dept. of Ecology*, 511 U.S. 700, 718, 128 L. Ed. 2d 716, 723, 114 S. Ct. 1900 (1994). Alaska's anti-degradation policy, 18 AAC 70.015, was approved by the EPA in 1997. See 18 AAC 70.015.

The DEIS states that "[i]nmeasurable direct, indirect, or cumulative effects to fisheries resources are not anticipated." DEIS at 3-45. The DEIS lacks the evidence to back this up, especially in light of the 35 anadromous stream crossings required under the Preferred Alternative, and the agency's proven track record of culverts blocking fish passage. DEIS at 3-47. How can the agency be sure of insignificant effects on fisheries? Given the lack of adequate road maintenance and problems with fish passage across the Tongass, how can the public be assured that these stream crossings will not result in blockage to fish passage? To comply with NFMA, the Forest Service must adequately show that its management plans will not adversely affect fish habitat.

"No management practices causing detrimental changes in water temperatures or chemical composition, blockages of water courses or deposits of sediment shall be permitted in these areas which seriously affect water conditions or fish habitat."

36 C.F.R. § 219.27(e)

In order to qualify for a variance from anti-degradation requirements and water quality criteria, the Forest Service must demonstrate that "allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located" and that "the resulting water quality will be adequate to fully protect existing uses." See 18 AAC 70.015(a)(2)(A)&(C). The DEIS fails to provide sufficient information and analysis to support these required findings.

XII. THE FOREST SERVICE MUST COMPLY WITH EXECUTIVE ORDER 11990.

Executive Order 11990 prohibits construction in wetlands where practicable alternatives exist and requires that "all practicable measures" be implemented to minimize harm to wetlands. All action alternatives require construction of roads across wetlands. According to the DEIS, the action alternatives were developed to address the Purpose and Need for the project. The Forest Service failed, however, to evaluate the CCC Alternative, which minimized harm to wetlands by limiting the construction of roads to a limited number of short spur roads. Since the CCC Alternative is a practicable alternative and requires little, if any, road construction across wetlands, the Forest Service must evaluate and select this alternative to comply with Executive Order 11990.

XIII. THE DEIS FAILS TO FOLLOW THE RECOMMENDATIONS OF THE ANADROMOUS FISH HABITAT ASSESSMENT (AFHA) BY FAILING TO CONDUCT A WATERSHED ANALYSIS.

To compare the effects of various alternatives on watersheds, the DEIS simply lists the amount of logging and road construction in each watershed on high hazard soils under each alternative. Other than a general sense of which alternatives will have more impact on fisheries and

other watershed functions, the effects analysis presented in the DEIS provides very little site-specific analysis of the effects of various alternatives on fisheries and other watershed functions. In order to give decisionmakers and the public a better understanding of the site-specific effects of various alternatives, the agency should complete a cumulative watershed effects analysis, as recommended by AFHA.

The AFHA report concluded that three (3) very important protective measures were needed to ensure fish habitat protection, including "completion of cumulative watershed effects analyses to evaluate natural and human disturbances." *AFHA Report Synthesis* at 14. The report further elaborated that "[i]n more comprehensive watershed analyses comparable to those in the PACFISH Strategy, if just applied on priority watersheds where timber will be harvested, will provide for both timber harvest and anadromous fish habitat protection." *Id.* at 15 (emphasis added). This recommendation responded to problems identified recognized by the AFHA team and expert reviewers with the existing project-level planning process, including the failure to:

- thoroughly evaluate potential cumulative watershed effects;
- have sufficient "project-scale inventories for conducting site-specific assessments in sale planning and layout;"
- take a "holistic approach in describing the important watershed functions and processes;"
- take a long-term view of the effect of clearcutting and roading on watershed processes and functions at the landscape scale; and

See AFHA Report, Appendix C, *An Evaluation of the Effectiveness of Current Procedures for Protecting Anadromous Fish Habitat on the Tongass National Forest* 38 (Sept. 1994). These experts concluded that conducting watershed analysis at the front-end of project planning would provide the Forest Service with essential information necessary to adequately protect fish habitat and watershed functions, and updating important resource inventories in a timely manner. *Id.* at 34. The DEIS for this timber sale, however, fails to include a watershed analysis and thus fails to ensure that fish habitat and watershed functions will be protected.

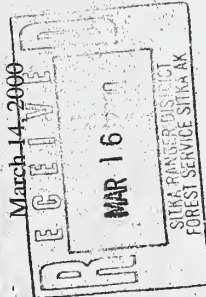
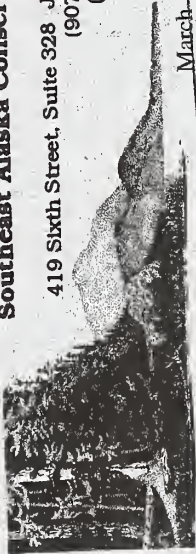
The recommended cumulative watershed effects analyses called for by AFHA would help the Forest Service determine:

"... how best to manage watersheds with steep unstable slopes, highly productive fisheries, productive timber lands, important and sensitive wildlife resources, high-value recreation and visual resources, cultural resources, and other considerations. ... Watershed analyses would also provide for assessments and management approaches more consistent with site-specific ecological processes and functions, resulting in a systems approach to management."

AFHA Report Synthesis, at 12.

The AFHA Fish Habitat Analysis viewed watershed analysis as playing a critical role in providing the essential information needed for implementing the Revised Tongass Plan at the project level.

Southeast Alaska Conservation Council
SEACC
419 Sixth Street, Suite 328 Juneau, AK 99801
(907) 586-6942 phone
(907) 463-3312 fax



Lisa Winn
Sitka Ranger District
201 Katian St., Suite 109
Sitka, AK 99835-7511

Dear Lisa:

Please accept the enclosed attachments to my Finger Mountain DEIS comments, dated February 28, 2000, and include them in the planning record for this sale. Please notify me if there are any problems with this request.

Best Regards,

Marc Wheeler
Grassroots Organizer

"Logging system and transportation plans are the primary foundation for current timber-sale project plans. Current planning is often too narrowly focused on the design of individual harvest units and road segments, so the interdisciplinary team has difficulty addressing broad ecosystem management and cumulative effects issues. Current project planning relies heavily on information from reconnaissance resource inventories. Time and resources are needed to validate these reconnaissance inventories and to collect site-specific information needed to validate these reconnaissance inventories. The practical opportunities for adjusting unit and road designs during layout, to mitigate problems or concerns missed in planning, are somewhat limited. Watershed analysis provides a mechanism to integrate essential information on watershed and fish habitat characteristics into the 'front-end' of project planning, and also provides a structured framework for updating needed resource inventory information in a timely manner."

6-7

AFHA, Appendix C, at 38

Conclusion

Again, we are very disappointed in the lack of meaningful analysis provided in this Draft EIS. The Forest Service should go back to the drawing board and consider a reasonable range of alternatives in a Supplemental DEIS. This range should include the CCC Alternative, or a substantially similar alternative developed collaboratively with the community of Tenakee Springs. This Supplemental DEIS should also include the Indian River Timber Sale, to paint a true picture of the cumulative impacts due to both timber sales.

Thank you for accepting these comments.

Best Regards,

Marc Wheeler
Grassroots Organizer

Employment Impact Multipliers and the Economic Role of Timber in the Small Forest Communities of Southeast Alaska

Guy Robertson

Key words: Economic impacts, employment multipliers, input-output models, small-area economics, timber sector, Southeast Alaska

Abstract:

Recent harvest declines in the Western United States have focused attention on the question of economic impacts at the community level. This paper uses community specific, time series employment data to estimate linear employment impact multipliers resulting from exogenously induced changes in timber employment and other basic employment in the small, semi-isolated communities of Southeast Alaska. Estimates were derived for each of the fourteen communities. When viewed as a whole, the study results provide no evidence for the existence of positive relations between changes in basic employment and other employment at the community level; changes in timber employment were seen to have no impact on other employment in Southeast Alaskan communities. While contrary to common perceptions regarding the workings of small scale economies, these results are not inconsistent with standard economic theory. However, they do highlight the need to consider the broader economic context within which economic impacts occur and the need to assess the validity of simplifying assumptions commonly used in models designed to estimate economic impacts at smaller spatial scales.

1. Introduction

Recent harvest reductions in the United States Pacific Northwest have served to focus forest policy debates on the issue of adverse economic impacts. The fact that much of the declining harvest volumes are the result of policy decisions regarding public lands in the region, rather than strictly economic factors relating to timber supply and demand, has further intensified the debate. Since timber-related economic activity is largely concentrated in rural areas in the region, much of the conflict has played itself out along geographical lines, with urban populations who see little economic gain from timber production pitted against rural populations who see logging and timber processing as an important part of their cultural heritage and economic livelihood. Moreover, as a result of both harvest declines and long-term growth in other sectors, timber activity comprises an ever smaller proportion of aggregate economic activity in even rural portions of the region. At the same time, however, certain communities maintain relatively high proportions of timber employment in their total employment mix. An important consequence is that economic impacts which are insignificant at the regional level, may nonetheless be quite large at smaller



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and

KIYOSHI YUKUTAKE

increasingly feasible. This report provides an example of such an investigation, using the small, isolated forest communities of Southeast Alaska as its laboratory. The overall approach is to use community level, time-series data to test for the existence and magnitude of a linear relationship between basic employment (of which timber employment comprises a substantial proportion) and non-basic employment at small spatial scales. The results indicate that no significant linear relation exists. While perhaps unexpected, these results are not all that surprising when viewed in light of the few similar studies which have been conducted in the past and the various qualifications which accompany the model. Nonetheless, the absence of a significant relation should help us to focus on the important elements driving local development and change, as well as point out the shortcomings of common modeling techniques.

2. Secondary Impacts and Their Estimation

In concentrating upon communities as a unit of analysis (or any other spatial unit for that matter), secondary impacts are a key concern. The focus of the impact analysis shifts from a consideration of directly affected industries and sectors to the ways in which these direct impacts further affect the local economy at large. Indeed, in the absence of secondary impacts, it makes little sense to speak of impacts in a spatial context, and individual industries or even firms become the appropriate unit of analysis. The fact that so much attention is directed to the question of economic impacts at local and regional levels attests to the importance of spatially concentrated secondary impacts in the eyes of concerned publics and professionals.

Several techniques exist for estimating these impacts. One such technique is the application of neoclassical economic concepts in regional modeling exercises. Here, the numerous behavioral equations characterizing various local markets are parameterized using econometric techniques, and the new equilibria following an exogenous shock are used to gauge economic impacts. Recent elaborations of this approach have resulted in extremely complex econometric models applied at national and regional levels, and commonly codified in the form of a Computable General Equilibrium model. The lack of adequate data at smaller spatial scales, however, has largely precluded the broad scale application of this sort of model to the estimation of local impacts. Input-output models, on the other hand, have enjoyed greater success in this area. This is, in part, the result of readily accessible techniques for adjusting national data-sets to local conditions, and the proliferation of computer programs which simplify and automate what was once an extremely tedious process. Hybrid models combining elements from both econometric and input-output approaches also exist (e.g., Israilevich et al. 1997), as do certain other approaches, but

spatial scales. As a result, the United States Forest Service and other public planning agencies have increasingly been called upon to address the local impacts of their policy decisions, particularly at the community scale.

Community level impacts have been a perennial concern for forest policy for many decades. Initially, the discussion centered on the relationship between various definitions of community stability and harvest scheduling policies designed to achieve an even flow of timber from public lands (Waggoner 1997). Here, much of the concern was centered upon the direct impacts of timber flows on logging and sawmilling activity. More recently, the focus has shifted to measuring and understanding adverse impacts on local economies from harvest reductions, and new concepts such as economic resiliency and diversity have been introduced (USDA Forest Service 1996). The central concern here has been the overall impact of reductions in timber activity on the local economy at large. This focus is further increased by the need to include an economic impact assessment in the environmental impact statements which must now accompany major forest planning decisions. In determining this impact, an overarching model which organizes and codifies our understandings of local economic interactions is essential. Various models, both quantitative and qualitative, have been used to understand and predict local economic impacts. Perhaps the most prevalent of these is the export-base model and its more formal derivative, the input-output model. In their simplest formulations, these models assert a linear relationship between export oriented economic activity ("basic") and local support activity ("non-basic"). The central idea here is that the basic sectors are the sole source of new income to the local economy and thus drive activity in the non-basic sectors. While many of the assumptions in these models are certainly open to question, the existence of a strong relationship between basic activity, such as timber harvesting and processing, and non-basic activity is widely upheld both in public and professional debates.

Owing in great part to a scarcity of data at smaller spatial scales, the actual magnitude and dynamics of the relationship between basic and non-basic activity has not been subject to much empirical investigation. Rather, a common approach has been to adjust broader scale models for perceived local conditions, and it is rare that the resulting estimates are evaluated against actual economic performance over time. This is unfortunate since the strength of the relation between basic and non-basic sectors is a key component in the accurate estimation of economic impacts in particular, and the overall role of forest sector activity in the sustenance and development of forest communities in general. In recent years, however, economic data at smaller spatial scales is becoming increasingly available, and empirical tests of this relation based on time series estimation techniques are becoming

none have experienced the same level of practical application as the pure input-output approach.

While a detailed explanation of Input-Output techniques is not needed here, a brief description of the model's key characteristics and assumptions is useful. Essentially, input-output models take a snapshot of the interactions governing a given economy at a particular point in time and use these interactions to map an exogenously generated change in one sector into expected changes in other sectors. In an impact analysis setting, this process can be summarized in the form of a linear impact multiplier for employment, income, or other variables of interest. For example, an employment multiplier of 1.7 attached to the timber sector would indicate that a total of 1.7 jobs would be generated in the local economy for every one job exogenously generated in the timber sector (one job directly generated in the timber sector and 0.7 secondary jobs generated throughout the local economy through indirect and induced effects). Two key assumptions are needed to derive these multiplier estimates. The first is the assumption of a static production function exhibiting constant returns to scale and fixed proportions of factor inputs. The second is the assumption of perfect elasticity in the supply of factor inputs, including labor. These assumptions, particularly the latter, are directly at odds with neoclassical theory. Input-output practitioners respond that, while inconsistent with mainstream economic theory, their models are the best available approach given the practical limitations of data and resources available for most impact assessments. While this may be true, it is important that analysts bear in mind the relation between modeling assumptions and perceived economic realities. In, for example, the assumption of perfect elasticity in factor inputs viable given the size of exogenous impacts and the spatial scale considered in the analysis? If not, how might the violation of this assumption affect multiplier estimates? More generally, how effective is the use of a static input-output approach and its linear impact multipliers in predicting dynamic changes? Alternative estimates of impact multipliers based on empirical analysis of actual impact processes as they occur over time are necessary in order to begin to address these sorts of questions.

3. Study Setting and Data

This report uses time-series data from the small, semi-isolated forest communities of Southeast Alaska to provide an empirical estimation of linear impact multipliers arising from exogenous changes in basic employment. From the town of Haines in the north to Ketchikan some 300 miles to the south, the region is comprised of numerous islands with miles of convoluted shoreline. The topography is extremely rugged and the population sparse. Currently, Southeast Alaska's population stands at about

75,000 people, 29,000 of which live in the town of Juneau. As well as being the seat for the Alaska state capital, Juneau constitutes the region's principal transportation hub and trade center. Other regional centers include Ketchikan with approximately 14,000 people living in or around the community, and Sitka with approximately 7,000 people living in the general area. Both of these communities were formerly the site of pulp mills, but both mills have closed in the last five years. The remainder of the population is divided between various small towns and settlements some of which hold over 1,000 residents, but many are considerably smaller. Many of the communities rely on air or boat traffic as their sole linkage to the other towns, and, with the exception of Haines, none of the major towns in the region have road linkages to the outside world.

Along with government activity centered in Juneau, the region's major industries include timber, commercial fishing, seafood processing, and, increasingly, tourism. Figure 1, which shows indexes for timber harvest, timber employment (including sawmills and pulpmills), and other employment, indicates several developments in the regional economy which are important within the context of this analysis. Owing primarily to growth in government activity and tourism, and increases in retirement benefits and other forms of non-wage income, total employment in the region demonstrates relatively steady gains throughout the study period. Timber harvests and employment, on the other hand, have witnessed broad fluctuations, including sharp increases in the latter half of the 1980s and equally sharp declines in the 1990s. Moreover, when viewed at the community level, these fluctuations are even more pronounced, involving large shifts in logging employment and the opening and closure of lumber and pulp manufacturing facilities. Much of the variation in basic employment examined in this study arises from these fluctuations. Of course, fluctuations in other basic categories, notably seafood processing,¹ are also important, but these fluctuations have not approached the absolute and relative magnitude of those in the timber sector nor do they follow the same general trends. It is important to note that strong increases in timber employment, as well as declines, are included in the study sample. Consequently, the estimation of local impact multipliers will include examples of both positive and negative impacts.

The data used in the analysis is supplied by the Alaska Department of Labor. It consists of quarterly employment levels in different industries (at

¹ Commercial fishing constitutes a major industry in the region, but unfortunately, employment data for this sector are not available. Employment in the industry appears to be relatively stable, however, and the omission of this sector should not result in a large systematic bias of estimation results.

the 4 digit Standard Industrial Classification (SIC) specification) for specific communities from 1981-1996. In its combination of spatial and industry detail, these data present a unique opportunity for analyzing economic impacts at small spatial scales. Moreover, several characteristics of the study region lend themselves to this sort of analysis. Among these is the fact that almost all manufacturing production is for export, simplifying the task of delineating basic and non-basic activities in the manufacturing sector. Another is that variation in basic employment is often quite large relative to total employment in a given community, thus increasing the variability in estimating impacts. Yet another is the small size and overall simplicity of the local economies included in the study sample. It is often assumed that less developed, rural economies of this nature will more readily exhibit the sort of relations examined in this report (Mulligan and Gibson 1984). If a positive relation between basic and non-basic employment is a common feature of all rural, forest communities, then Southeast Alaska would seem to be an excellent place to look for such a relation. Moreover, the richness of available data should further aid in this search.

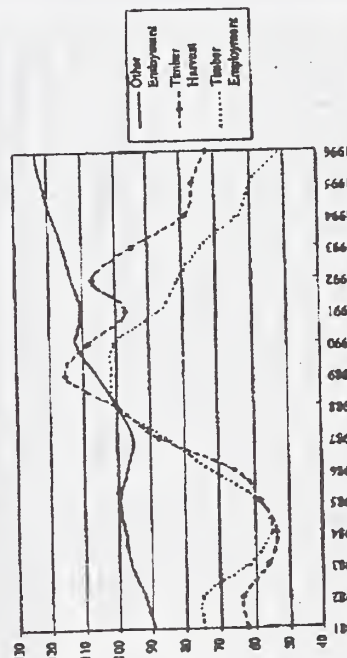


Figure 1. Indexes of timber harvest, timber employment, and other employment (1988 = 100) (Source: USDA Forest Service, Alaska Dept. of Labor). For reference, actual values in 1988 were: timber harvest: 951MMBP; timber employment: 3,499; and other employment: 27,436.

4. Estimating Impact Multipliers in Southeast Alaska

In the past, various studies have attempted to measure impact multipliers using time series data. Most early attempts to empirically estimate regional (and local) impact multipliers have relied heavily upon economic base theory. In an approach broadly analogous to a two sector input-output

model, the export oriented activities which comprise the basic sector are taken to be an exogenous driver which is causally prior and linearly related to changes in the non-basic sector. This suggests a linear regression model using non-basic activity as the dependent variable and basic activity as the independent variable. Impacts in the non-basic sector, however, will not be instantaneous, and the inclusion of a lagged independent variable has been a common modification to the simple regression model. This is the general approach taken in this study. Previous studies along these lines include Sasaki (1963), Weiss and Goding (1968), Moody and Puffer (1970), Moriarty (1976), and Henry and Nyankori (1981). Taken as a whole, results from these and similar studies are rather inconclusive, with several studies finding evidence for significant multipliers (e.g., Moriarty, and Henry and Nyankori), and others indicating no significant multiplier. Perhaps owing to the lack of consistent and convincing results, recent years have seen little activity in this sort of research, and no latter studies using time series analysis were uncovered in the course of the current analysis. One problem common to all of these studies is a lack of a sufficiently large data set in terms of both time series and cross sectional dimensions. In general, estimates are obtained for only a single town or community, and often these are based on annual data providing, extremely few degrees of freedom (especially when lagged variables are included in the regression equation). By drawing upon the numerous data points provided by quarterly data and providing estimates for numerous communities, this study attempts to provide a more robust and detailed estimation of linear impact multipliers.

Before presenting the statistical model and results, however, it is useful to visually examine the data in graphical form. Figure 2 provides an example using the town of Haines, Alaska. Basic employment was derived by summing employment in federal and state government with that in the manufacturing sectors (except in those cases, such as stone quarries, where manufacturing is obviously directed to local consumption). Non-basic employment is simply the total remaining employment. In both the figure and subsequent statistical analysis, the data was smoothed using a four quarter moving average in order to eliminate the relatively high degree of seasonality present in much of Southeast Alaska's economy. In spite of the extremely high variation in basic employment evident in Figure 2 (primarily the result of shifting logging employment and a sawmill opening and then closing), non-basic employment in Haines shows relatively little fluctuation, and it is impossible to assert the existence of a strong relationship between these two series. Similar graphs for certain other communities in the sample do exhibit some evidence of a positive relation, but others display little or no correlation and a few even exhibit a strong negative relation. When viewed

as a whole, a simple visual examination of the data provides no evidence of a systematic relation between the two data series one way or the other.

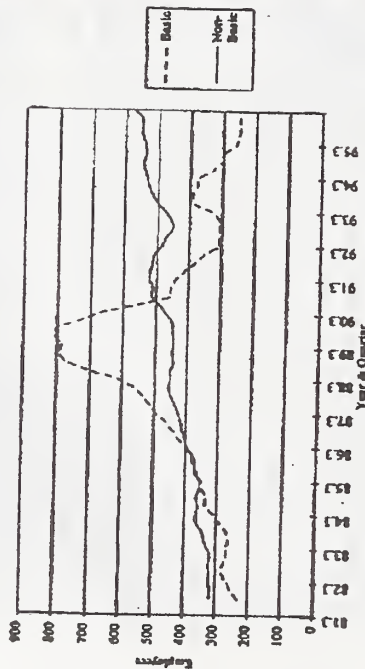


Figure 2. Basic and non-basic employment in Haines, Alaska (Source: Alaska Dept. of Labor). Data smoothed with 4-quarter moving average to eliminate seasonality.

The apparent lack of a linear impact multiplier can be further tested using statistical techniques, techniques which are more amenable to summarization and less liable to subjective interpretation than is a simple observation. The challenge here is to develop a statistical model which is both flexible enough to be uniformly applied to all communities in the study sample and sensitive enough to register impacts should they exist. The final model used in this analysis is relatively simple, but alternative models were also tested with quite similar results.² The model begins by assuming a linear relationship between non-basic employment and current and lagged values of basic employment. A simple trend variable is then added to account for growth in tourism-related activity and the influence of increases in non-wage income, factors which have experienced relatively steady growth throughout the study period. The data is then first differenced, resulting in the following

2. Alternative model specifications included different lag structures, estimations on levels as well as differenced data, and estimations using only timber employment as an independent variable. In terms of the ranking of community specific estimates, minimum and maximum values for these estimates, and overall sample means across all community estimates, the models demonstrated a remarkable degree of stability. Much of this analysis along with a more detailed technical description of estimation techniques and issues will be published in a forthcoming US Forest Service technical report. Interested readers are encouraged to contact the author for details.

Employment Impact Multipliers and the Economic Role

model which was estimated separately for each of the 14 communities used in the study sample:

$$[1] \quad \Delta NB_t = \alpha + \sum_{i=1}^{12} \beta_i \Delta X_{t-i} + e_t$$

where ΔNB_t is the change in non-basic employment in period t , and ΔX_{t-i} is the change in basic employment in period $t-i$. Note that the trend variable is now incorporated in the intercept term. Several additional modifications were made to equation [1] before conducting the final estimates. First, the β coefficients on ΔX_{t-i} were constrained to fit a fourth degree polynomial with its endpoint at $i = 12$ constrained to 0 (see Greene 1993 for a description of polynomial distributed lag techniques). Second, autocorrelation proved to be a problem even after first differencing the data—a likely result of the use of a 4 quarter moving average—and an autocorrelation correction term (AR1) was used. The resulting model states that current changes in non-basic employment are a function of a constant and changes in basic employment over the past 12 quarters. The sum of the β s provide a statistical estimate of a linear impact multiplier, except in this case 1 must be added to the estimate to obtain multipliers comparable to those produced by input-output and similar approaches. Estimation results ordered from highest to lowest are shown in Table 1.

Table 1. Regression results

	Ave. Employment	Intercept (α)		Multiplier (sum of β s)			
		Value	t-value	Value	St. Dev.	t-value	R ²
Yakutat	252	1.05	1.06	0.36	0.21	1.72	0.42
Ketchikan	6837	28.33	1.98	0.29	0.44	0.67	0.33
Anchorage	294	-0.45	-0.86	0.25	0.13	1.96	0.15
Wrangell City	880	0.01	0	0.23	0.15	1.54	0.20
Sitka	3676	16.42	1.45	0.22	0.34	0.4	0.41
Hydaburg	100	0.04	0.06	0.08	0.08	0.97	0.03
Haines	849	6.12*	2.11	0.08	0.14	0.55	0.25
Ft. Wainwright	510	0.98	0.57	-0.03	0.28	-0.11	0.14
Thorne Bay	372	1.76	0.89	-0.1	0.24	-0.43	0.53
Petersburg	1491	-0.26	-0.11	-0.2	0.37	-0.53	0.3
Kake	250	1.29	0.93	-0.4	0.34	-1.18	0.46
Metlakatla	540	0.71	0.33	-0.41	0.49	-0.84	0.37
Juneau	13735	55.66*	2.09	-0.46	0.97	-0.48	0.58
Hollis	852	7.81*	4.82	-0.48*	0.17	-2.84	0.42
Mean	2188	—	—	-0.04	0.11	—	—

* Indicates significance at the 95% level. Mean multiplier estimate is a simple average.

Mean standard deviation calculated using: $\sqrt{(\sum St.Dev.^2)/n}$

When viewed on a community by community level, the results are not all that encouraging. The low r-squared (R^2) values are not surprising, given the

lessened positive impacts. In a region or era characterized by economic stagnation, the results may have been quite different.

This need to consider the broader context in which impacts occur is especially important if one seeks to extend the results of this study to other regions or countries. For the sake of argument, two examples are briefly considered here. The first is Japan, for a number of decades Japan has experienced high rates of migration from rural to urban areas, especially among working age individuals. This has resulted in increasingly severe shortages in labor and a rapidly aging workforce in many of the country's forest communities (Robertson and Waggener 1992). Under these conditions, an impact multiplier based on the assumption of unconstrained local labor supplies would significantly overestimate the impact of, for example, the opening of a new sawmill. The Russian Far East, the second example considered, presents a very different situation. The economic contractions of the 1990s have resulted in significant levels of unemployment and underemployment in the forest communities of the region (Sheingauz et al. 1996). Development projects promoting forest products production in these localities will likely find ample labor, but it is doubtful that the capital needed to generate secondary impacts will be forthcoming. Additionally, even in the case of residential services demanding little initial capital, it is possible that the entrepreneurial experience necessary to identify and take advantage of new opportunities is absent. Once again, an increase in basic activity may have little positive secondary impacts on the local economy. A sharp decrease in basic activity, on the other hand, may be devastating. Of course it is possible to identify conditions which would enhance rather than dampen the multiplier effect of the forest industries and other basic activities. Such conditions would include ample local supplies of labor and capital, perhaps in combination with economic expansion at the regional or national levels. In any case, the magnitude of local multipliers in particular and the overall role of forest products industries in general cannot be assessed without a thorough consideration of the broader economic context in which they exist.

6. Conclusion

In spite of an appropriate study setting and rich data-set, this analysis provides no evidence for the existence of a positive linear employment impact multiplier in the communities of Southeast Alaska. It is important to be aware of the boundaries of this result. Other types of economic impacts may be present in Southeast Alaska, but they are not apparent when analyzing employment data in a linear regression context. This, in turn, calls into question the common assumption that a positive relation between timber employment and other employment necessarily exists at smaller spatial

scale. There are various reasons why this relationship may be relatively small or insignificant, each of which constitutes a potential avenue for future research. In the mean time, it is important that researchers and economic practitioners engaged in impact estimations be aware of the ways in which their models and predictions may be in error and the ways in which common measures of economic performance may fail to capture important aspects of impact processes. On a more general level, formal and informal economic models which emphasize timber activity as a driving force in local economies deserve careful scrutiny and need to be assessed within the context of broader economic characteristics and trends.

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9 April 1999

Kimberly Titus
Alaska Department of Fish and Game
Division of Wildlife Conservation
PO Box 240020
Douglas, AK 99824-0020
907-465-4266; FAX 907-465-4272; E-mail kmr@fishgame.state.ak.us

RH: Brown Bear Riparian Habitat Management • Titus and Beier

SUITABILITY OF STREAM BUFFERS AND RIPARIAN HABITATS FOR BROWN

BEARS

KIMBERLY TITUS, Alaska Department of Fish and Game, PO Box 240020, Douglas, AK
99824, USA, email: km_titus@adfg.state.ak.us

LAVERN R. BEIER, Alaska Department of Fish and Game, PO Box 240020, Douglas, AK
99824, USA, email: vern_beier@adfg.state.ak.us

Abstract: We studied riparian habitat use by a high density brown bear (*Ursus arctos*) population on the Tongass National Forest (Tongass) where spawning salmon (*Oncorhynchus* spp.) provide an important seasonal food resource. The Tongass contains large tracts of pristine old-growth coniferous forest and some of these tracts are within riparian zones that are subject to timber harvest and various timber management guidelines. Determining the size of protective riparian no-cut buffers to conserve fish and wildlife habitat and water quality was a major component of a revision of the U.S. Forest Service's Tongass Land Management Plan (TLMP; U.S. Forest Service 1997). We radiocollared 111 brown bears on a 1,119 km² portion of Chichagof Island to evaluate bear use of riparian habitats and to determine how proposed buffers might be used by brown bears. Our study area was managed for timber harvest and had >25 salmon spawning streams and associated riparian habitats with various riparian-zone management opportunities. Sixty-three percent of 2,069 aerial radiotelemetry locations were in riparian habitats during August and 61% of all August locations were <1,000 m

from a salmon-spawning stream. The new Tongass forest plan has 2 types of administrative buffers on salmon streams: (1) a riparian standard and guideline, which is a variable-width buffer and usually incorporates <150 m of protection, and was established primarily to protect salmon habitat and water quality, and (2) a 153-m no-cut buffer established to protect foraging areas for brown bears. Twenty-four percent of the August locations were within the riparian standard and guideline buffer and 39% fell within the brown bear buffer, assuming it was applied across all salmon spawning streams used by bears. These results were useful in revising the Tongass forest plan and in assisting decision-makers with the necessary information to change historic land allocations and provide more habitat conservation for brown bears. A panel of brown bear scientists recommended that a 153-m no-cut forest buffer be placed on all salmon spawning streams that are used by brown bears. The final forest plan weakened this recommendation, and its implementation will be subject to future interpretation. However, compared with previous forest planning efforts that had little protection of riparian habitats and none specifically for brown bears, this conclusion was an important measure for brown bear conservation.

URSUS 11:000-000

Key words: Alaska, brown bear, forest management, *Oncorhynchus*, salmon, Tongass National Forest, *Ursus arctos*.

Wildlife biologists interested in providing useful information for resource management decision-makers often find the link between science-based information and land allocation decisions to be a complex combination of political, regulatory, and conservation issues. Resource agencies often strive to integrate research and

Habitat Assessment 1995). As the Tongass forest plan was being developed, we provided information to the science team and decision-makers about our findings regarding brown bear use of salmon-spawning habitats and associated riparian areas. We report on brown bear use of riparian habitats and how well the scientific findings and subsequent land allocation decisions fit these data relative to the conservation of riparian habitats. Our objectives were to (1) demonstrate seasonal use of riparian forest areas by brown bears, (2) review the science component of the Tongass planning process, (3) describe riparian protection measures in the final plan, and (4) describe the amount of protection provided to brown bears as determined by our data.

STUDY AREA

The Tongass National Forest covers approximately 88,000 km² within the Alexander Archipelago of southeast Alaska. Brown bears are found on Admiralty, Baranof, Chichagof, and associated islands, and the mainland; they are absent from islands south of Frederick Sound. The area is a coastal, temperate rainforest with a cool maritime climate. Snow accumulates at sea level in some areas during winter, and elevations >600 m are covered by snow 6–9 months of the year.

Our 1,119 km² study area (Fig. 1.) contained about 370 bears (Titus and Beier 1993, Miller et al. 1997) and was on the northeast portion of the 5,340-km² Chichagof Island. The connection of this area with the rest of Chichagof Island is by a narrow neck of land, making the study area island-like. Topography is rugged with mountains rising from sea level to 1,100 m. Forests are primarily western hemlock (*Tsuga heterophylla*) and Sitka spruce (*Picea sitchensis*) mosaics. Poorly drained areas include non-forested muskegs and support tree species such as Alaska cedar (*Chamaecyparis nootkatensis*) and lodgepole pine (*Pinus contorta*). Mountain hemlock (*T. mertensiana*) is common in the transition zone to alpine habitats. Nonforested steep slopes are common >300 m and

management to assist with problems of uncertainty in ecosystem management and to minimize future controversy with objective information (e.g., Christensen et al. 1996, Thomas 1996). The Tongass National Forest covers most of southeast Alaska and its management has been the source of controversy. Much of the debate has focused on determining how much old-growth coniferous forest should be set aside to maintain habitat for viable fish and wildlife populations versus how much should be allocated for timber harvest. Completion of TLMP (USDA [Department of Agriculture] Forest Service 1997) for the Tongass National Forest in 1997 was the culmination of >10 years of planning. During part of this planning, scientists analyzed and synthesized new information in a value-neutral manner; this information was provided to TLMP decision-makers (Everest et al. 1997). Most of the wildlife information was subject to peer-review. For selected wildlife species including the brown bear, assessment panels were convened with experts, and they evaluated the risk to that species of draft forest plan alternatives (Swanston et al. 1996).

Conservation of brown bears on the Tongass has received considerable attention over the past decade. This is because brown bears (1) occur in very high densities in some portions of the Tongass (Schoen and Baier 1990, Titus and Beier 1993), (2) have high public interest for viewing and hunting (Titus et al. 1994), (3) have economic value (McCollum et al. 1996), and (4) are subject to conservation concerns associated with development activities (McLellan 1990). Pacific salmon are an important component of the annual cycle of coastal Alaskan and British Columbia brown bears (Hamilton and Burnell 1987, Barnes 1990, Schoen and Beier 1990) and some think that maintaining high brown bear densities may be linked to the conservation of forested riparian habitats (Schoen et al. 1994). Maintaining forested buffers along anadromous fish streams also is recognized as important for the long-term health of salmon stocks (Anadromous Fish

Over the 8-year study we believe we captured bears in representative habitats across the study area and that there was no bias regarding capturing most bears in alpine habitats and subsequently assessing their riparian habitat use patterns. We eliminated 9 bears captured at the Hoonah landfill from analysis because their foraging and home range patterns differed from those of >200 brown bears we monitored on Admiralty and Chichagof islands.

Following methods of Schoen and Baier (1990), we conducted aerial radiotelemetry flights at 5–14 day intervals from late April through early October. We defined riparian habitats to be those areas, typically forested with Sitka spruce, along salmon-spawning streams and associated tributaries. These areas often contain alluvial and floodplain soils and are more productive than poorly drained upland habitats. We plotted radiotelemetry location points on 1:63,360 topographic maps and transferred to ortho-photo quads using an ArcView (Environmental Systems Research Institute, Inc. 1996) data entry system. Based on retrieval of 12 marten (*Martes americana*) radiocollars as a test of aerial radiotelemetry error from the same study area and using the same airplane and pilots as our study, R. Flynn (personal communication, Alaska Department of Fish and Game, Juneau) estimated locations to be ± 100 m of the actual location. Less rigorous evaluation of the error associated with the retrieval of >20 brown bear collars (dropped collars or bear mortalities) indicates error up to 150m. We acknowledge these errors in our data but we did not incorporate error into our analyses. We believe that the general patterns of riparian use by brown bears would not be changed by incorporation of an error analysis into this paper.

We acquired Tongass National Forest Geographic Information System (GIS) data layers for our spatial analysis. Important attributes included bear radiotelemetry location data and spatially referenced information about streams and riparian buffers as

are composed of rock, vegetated avalanche slopes, and alpine habitat. Streams that contain spawning salmon are abundant on the study area. Over 25 streams (Fig. 1) in the study area support spawning chum (*O. keta*) and pink (*O. gorbuscha*) salmon with escapement varying from a few hundred pink salmon on small streams 1–2 m wide to a maximum of 90,000 pink and 45,000 chum salmon for larger streams in some years. Salmon escapements vary widely among years.

The study area has 2 communities with about 250 and 750 inhabitants. The area has at least 420 km of roads, including those under Forest Service, Alaska native corporation, and state or local management. Clearcut logging of lowland old-growth forests has occurred along all roads. Most of this timber harvest occurred during the 1980s and early 1990s. The amount of historic no-cut stream-side buffers varies across the study area.

METHODS

We captured, immobilized using Telazol® (Fort Dodge Animal Health, Fort Dodge, Iowa, USA) at 7–10 mg/kg of estimated body weight (Taylor et al. 1989), and radiocollared 111 brown bears (37 males, 74 females) 141 times from October 1989 through October 1997 using methods standard for bear biologists. Subadult bears received surgical-tubing break-away radiocollars (Telonics, Mesa, Arizona, USA). We captured 73% of the bears by carrying from helicopters in rugged alpine habitats, mostly in June and early July when a large portion of the bear population is in this habitat. We also captured 18% of the bears with footsnares near a local landfill or on well-used trails along salmon-spawning streams. A few bears (9%) were captured by shooting them with a dart gun, mostly at a local landfill. Capture and handling methods followed the Alaska Department of Fish and Game's animal welfare policy to assure that bears received humane care and treatment.

Titus	8	<p>females. We had 21 females and 1 male with >30 locations. Most of our aerial telemetry data were acquired from April through October (April, 6%; May, 10%; June, 14%; July, 13%; August, 30%; September, 16%; October, 10%).</p>
Riparian Habitat Use		<p>We conducted 2 analyses to demonstrate brown bear use of riparian habitats. We visually categorized 23 habitats while obtaining a location and we also acquired riparian habitat information using a Forest Service GIS layer. Based on the visual assessment of habitat categories, 15.7% (321 of 2,043) of the locations were in riparian habitats across all seasons, and 92.9% (222 of 321) of these locations occurred during August. Our results follow the seasonal patterns of habitat use by southeast Alaska brown bears described by Schoten and Beier (1990). The combination of riparian and old-growth forest habitat types accounted for 59% (373 of 629) of all August locations. Visually discerning where a riparian forest ended and where our upland old-growth forest habitat category began was not always easy, so there was error in separating these 2 habitats. In May, only 2% (4 of 199) of the locations were in riparian habitats. Additionally, our radio-collared brown bears used avalanche chutes extensively. Bear use of avalanche chutes was most frequent during September when 44% (145 of 331) of all locations were in this habitat type. Our experience indicates that by mid-September most brown bears are no longer associated with salmon streams and have moved up in elevation to feed on ripening currants (<i>Ribes bracteosum</i>), blueberries (<i>Vaccinium ovalifolium</i> and <i>V. alaskanum</i>), salmonberries (<i>Rubus spectabilis</i>), and other vegetation.</p>
Use of Riparian and Salmon Stream Buffers		<p>The greatest number of radio locations in the riparian buffer occurred in August when most bears were near salmon streams (Fig. 2). The riparian standard and guideline buffer was usually narrower than the prescription of a 153-m brown bear buffer along all</p>

programmed for the final TLMP (USDA Forest Service 1997). We acquired GIS maps of all of the anadromous fish streams from the study area and manually corrected the maps to reflect our best knowledge of the extent of spawning pink or chum salmon. Data on bear locations were applied to 2 different administrative buffers for the new TLMP. The riparian standards and guideline buffers (riparian buffers) for TLMP vary in width and are based on a complicated combination of stream channel types, stream class type, and soil characteristics. The riparian standards and guidelines were applied during the planning of an on-the-ground management activity (e.g., timber harvest), and our GIS data represent the best approximation of that riparian, no-cut buffer. These riparian buffers vary from 31 m to >153 m around a stream (Fig. 1). The Tongass plan also has a standard and guideline requiring the establishment of 153-m no-cut buffers along streams where there are important brown bear foraging sites (brown bear buffers).

We established 6 distance buffers at 50 m intervals from salmon spawning streams to evaluate the proportion of bear locations in each successive buffer. We also evaluated the proportion of locations in the variable-width riparian buffers. Although we evaluated these other distance buffers, only the 153-m brown bear and the riparian buffers were directly relevant to the Tongass forest plan. For July, August, and September we cumulatively assessed the proportion of bear locations <1,000 m of salmon spawning streams. All buffers and management prescriptions are measured in feet by the Forest Service, but are reported here to the nearest meter.

RESULTS

We acquired 2,069 locations from 111 brown bears over 6 years, and our locations were distributed across most watersheds in the study area. Results were skewed toward females (79% of locations) because our ability to recapture and maintain collars on females was greater and because our study population was skewed towards

streams that have spawning salmon; hence, they had fewer bear locations in them.

Twenty-four percent of all August brown bear locations were in the riparian standard and guideline buffer and 36% were in the 153-m brown bear buffer. The riparian standard and guideline buffer composed 3.7% of the study area, and the fixed 153-m buffer composed 9.3% of the study area, suggesting selection by brown bears for these areas compared to their availability. During July, August, and September, 3 of 42 bears (with > 10 locations) were never found in this 153-m buffer, suggesting some coastal brown bears do not eat salmon (Schoen and Beier 1990, Hilderbrand et al. 1996, K. Trus and L. Beier unpubl. data). Ten of 42 (24%) bears had >50% of their locations within this buffer, and 3 bears were in the buffer >75% of the time.

We found that 23% of the August locations were in the narrow 50-m buffer.

Examining successive 50-m incremental buffers, we found a high concentration of locations near the stream and a more linear decrease in buffer use beyond 200 m (Fig. 2). We found that 28%, 44%, and 27% of the locations were within 300 m during July, August, and September, respectively.

We examined the proportion of bear locations continuously in an area up to 1,000 m from a salmon spawning stream and found that 61% of the August locations were within this area (Fig. 3). During July and September, bear use of the area within 1,000 m of a salmon spawning stream dropped to 44% and 41% of the locations in this area, respectively.

DISCUSSION

Southeast Alaska brown bears were highly selective for the narrow, forested riparian zone during mid- to late-summer. Bears concentrated on specific segments of streams where they catch spawning salmon. They move from other habitats to these riparian areas in mid-July when spawning salmon first arrive in streams. Although peak

spawning varies by a few weeks among neighboring streams, most pink and chum salmon spawn in mid- to late August. By early September, bears begin to move away from these riparian areas and by mid-September, most bears have moved to other habitats. The forested riparian habitat associated with these salmon spawning streams provide security and resting habitat for brown bears. During the peak of the salmon run and foraging period in August, most bears travel small distances (<1,000 m) between foraging sites on the stream and resting sites in the adjacent riparian forest. Our radiotelemetry results indicated that these brown bears do not usually travel to > 1 salmon spawning stream and that they visit the same stream section year after year. These factors lead us to conclude that riparian habitat and the maintenance of no-cut buffers are important for the long-term conservation of high-density brown bear populations.

The analysis of the proportion of brown bear locations <1,000 m from salmon-spawning streams indicated that bear use was concentrated near the stream (Fig. 3). Riparian and floodplain forests dominated by Sitka spruce seldom extend beyond a few hundred meters from the stream. On our study area these riparian forests often transition to open muskegs or upland hemlock-spruce forest. These habitats were used by brown bears, but less so than the riparian forest. At distances approaching 1,000 m from a salmon-spawning stream, brown bears probably are not influenced by the salmon food resource and the nearby riparian forest in terms of short-term habitat use.

Bear Use of Administrative Buffers

The riparian standard and guideline buffer and a blanket buffer of 153 m on all salmon spawning streams provided different levels of protection for brown bears during late summer when most bears were in lowland old-growth and riparian habitats (Fig. 2). Our analysis indicated that the 153 m buffer had 13% more locations than the riparian standard and guideline buffer during the peak period of the salmon run in August.

riparian habitats. A key finding of the brown bear risk assessment panel was that "an undisturbed buffer (no harvest, no roads) along salmon-bearing streams where bears concentrate and feed helps to maintain brown bear habitat. Such buffers provide some isolation of bear feeding sites from humans and other bears. The panel identified 500 feet (153 m) along each side of salmon bearing streams as an appropriate buffer width" (Swanston et al. 1996:9). The brown bear risk assessment panel was concerned about the long-term health of salmon habitat, because they felt that salmon habitat was important for brown bear populations.

Use of Information and Forest Service Decisions

The use of scientific information about brown bear use of riparian areas evolved as the Tongass was developed. First, a Revised Supplement to the Draft Environmental Impact Statement (U.S. Forest Service 1996) for the Tongass in 1996 and before the brown bear panels were convened had no specific buffer distances and it stated "Maintain a buffer of productive old growth forest on both sides of important and traditional brown bear foraging habitats to provide cover during feeding, among bears, and between bears and humans" (U.S. Forest Service 1996:4-126). Second, when convened in 1996, the brown bear panel reviewed this draft and provided a specific distance recommendation. Third, Iverson and Rene (1997) reviewed the conceptual approach for maintaining viable and well-distributed wildlife populations across the Tongass as part of the planning process. They indicated that a key parameter for brown bears based on their viability synthesis was the maintenance of "... 300-foot buffers on low-gradient class I streams to provide visual barrier and foraging habitat" (Iverson and Rene 1997:5). Fourth, the brown bear risk assessment panel met again in 1997 to assess the likelihood that the Final EIS (U.S. Forest Service 1997) preferred alternative (with a 153-m buffer) would provide sufficient habitat to support a viable and well distributed brown bear population across

The levels of riparian habitat protection were based on 2 assumptions. First, we assumed that there was no error in our radiotelemetry data and that the buffers were correctly mapped. The 153-m buffers were mapped based on our knowledge of the study area and modification of the Forest Service's GIS class I anadromous fish streams to include only those portions of the stream where salmon actually spawned. These errors were probably small for this application but they would increase when applied on the Tongass away from our research study area. The riparian standard and guideline buffer was more problematic to apply regarding its correctness because the boundaries were subject to field evaluation and interpretation. The Forest Service, along with other agency experts, crafted a complicated riparian standard and guideline that will have some error when translated from the GIS map to its application in the field. Because this riparian standard and guideline is new and complicated, the exact size of the buffer may change because of on-the-ground information when implemented. Second, we assumed that the buffers could actually be allocated on the ground. In reality, some streams on the study area either have no streamside buffers or the buffers are much smaller than the analyses we performed here. Consequently, the level of streamside protection afforded by the new TLMP can only provide these buffers from 1998 forward. Riparian areas with little or no existing forested buffer (i.e., clearcut up to stream bank) have little use by brown bears even though these stream sections have spawning salmon (Schoen et al. 1994).

Risk Assessment Panels

The Forest Service used a modified Delphi approach with species or ecosystem experts to estimate the risk to specific wildlife resources and socioeconomic conditions when implementing the various management alternatives in the draft TLMP (Swanston et al. 1996). In addition to expert panels for the brown bear, there were panels for other wildlife species and a fish and riparian panel to integrate protection recommendations for

their historic range within the Tongass. The 1997 panel "reiterated their concern for a minimum 500 feet no harvest/no road buffer around brown bear feeding areas. This concern was based largely on available telemetry data" (C. Meade 1997, Brown bear risk assessment panel summary; Tongass Land Management Plan Revision Planning File, USDA Forest Service Juneau, Alaska USA). Concern was expressed by some brown bear experts that the Forest Service was changing the burden of proof and weakening the suggestions of the panel. The final Tongass plan Record of Decision was published in July of 1997 (U.S. Forest Service 1997:4-114) and it stated -

During project planning, evaluate the need for additional protection of important brown bear foraging sites (e.g., waterfalls used as fishing sites) in addition to the buffers already provided by the Riparian and Beach & Estuary Fringe Forest-wide standards & Guidelines, and the Old-growth Habitat and other natural setting Land Use Designations. Establish forested buffers, where available, of approximately 500 feet from the stream sites where, based upon the evaluation, additional protective measures are needed to provide cover among bears while feeding, or between brown bears and humans. This may be especially important on Class I anadromous fish streams . . . where a large amount of bear feeding activity on salmon occurs. Consider the combination of bear foraging behavior, stream channel types, and adjacent landform to help identify probable important feeding sites.

As indicated from our results (Fig. 2), the risk to brown bears will increase should this buffer only be applied in a few areas. Because of the high brown bear density on our study area and across all of Baranof and Chichagof islands that are available for timber harvest, we believe that nearly all of the salmon spawning streams are important for

brown bears. During the August peak period of salmon spawning and bear foraging for salmon, the 153-m brown bear buffer contained 36% of the radiotelemetry locations, whereas the 1,000 m hypothetical buffer contained over 60% of the locations. Whether there will be long-term decline in brown bear numbers as a result of this management prescription will be difficult to determine. Other factors such as hunting pressure, roads and access management, and the long-term health of salmon stocks likely will mask the effectiveness of these buffers assuming that the buffers receive some use by brown bears. Our results demonstrate the importance of these forested riparian habitats for brown bears and that it is a prudent conservation measure to establish these stream buffers. We believe that both the variable-width riparian buffer and the 153-m brown bear buffer should be instituted as stated in the new Tongass forest plan. The brown bear buffer can be applied with discretion in the forest plan. We agree with the suggestion of the brown bear panel that this buffer should be applied across all salmon-spawning streams used by brown bears rather than a discretionary approach. Subsequent field evaluation should take place to determine if the buffer can be reduced.

ACKNOWLEDGMENTS

This study was funded primarily by the Alaska Department of Fish and Game (ADF&G) and the Federal Aid in Wildlife Restoration Program (Project W-24-3). The Alaska Region of the U.S. Forest Service provided financial assistance from 1989-93, and their support was instrumental in initiating this study. We appreciate the support from the Hoonah Ranger District during the early years of this study. J. Schoon and D. Anderson provided useful advice during the initial phases of this study. G. Fisher of the U.S. Forest Service provided valuable assistance with GIS programming, and our results were made possible by his ability to provide the riparian standard and guideline data layers. R. Flynn provided important GIS analyses, and G. Pendleton assistance with data

List of Figures

Fig 1. Northeast portion of Chichagof Island, Alaska depicting U.S. Forest Service riparian standard and guideline buffers along salmon spawning streams and August brown bear radiotelemetry locations, 1990–97.

Fig. 2. Percent of brown bear radiotelemetry locations ($n = 102$ bears; 1,935 locations) within 6 distance buffers and 1 administrative stream buffer on the Tongass National Forest, Alaska, based on a geographic information system analysis. The riparian standard and guideline (riparian buffer) and the 150 m brown bear buffers are part of the Tongass Land and Resource Management Plan (U.S. Forest Service 1997). All other distance buffers are hypothetical.

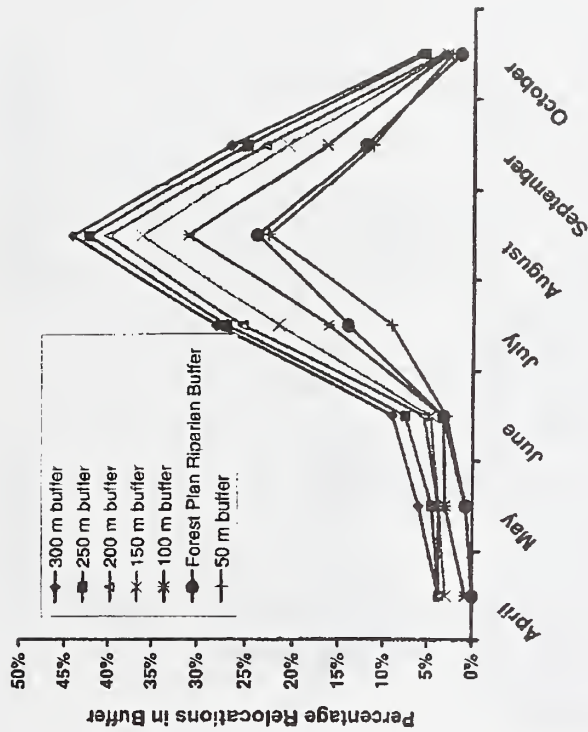
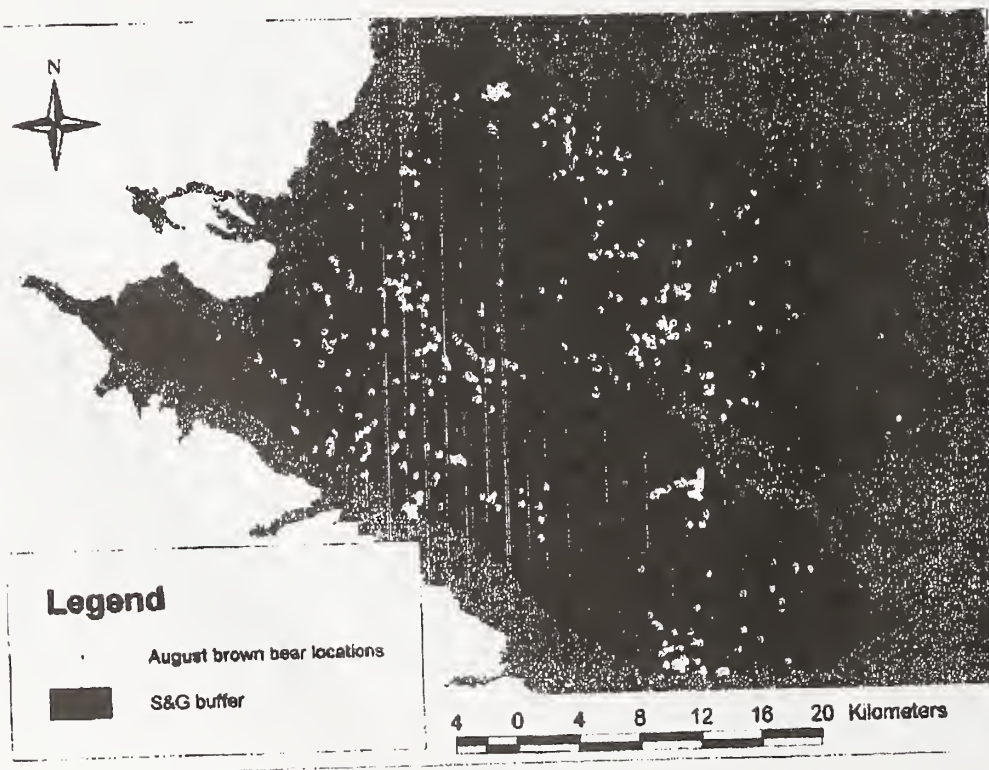
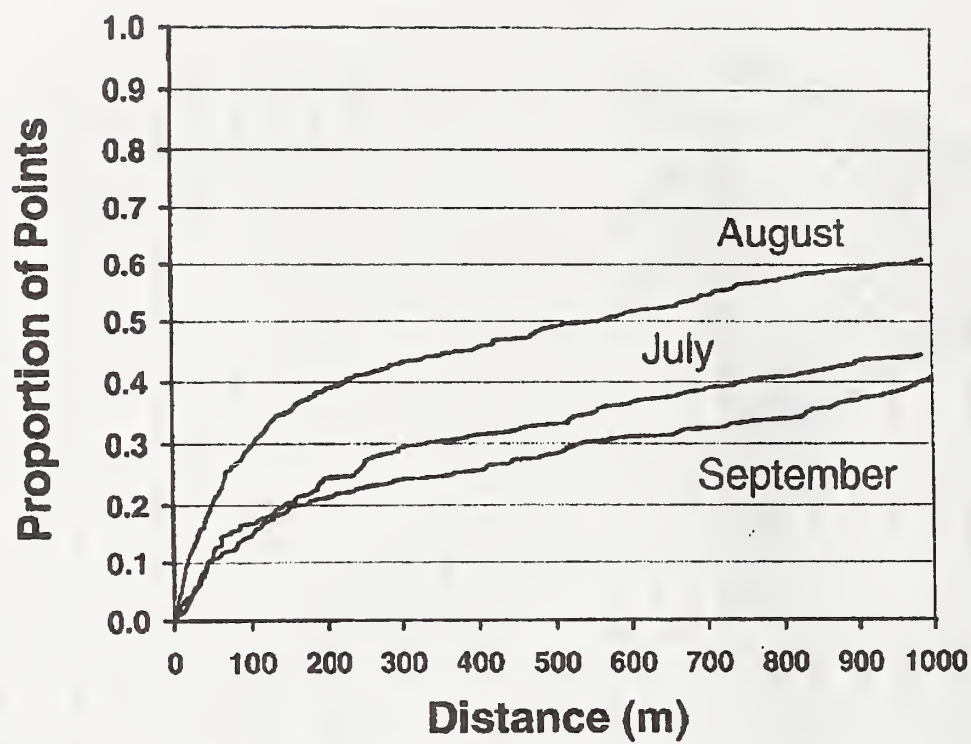


Fig. 3. Monthly cumulative proportion of brown bear radiotelemetry locations up to 1,000 m from salmon spawning streams ($n = 116$, July, $n = 383$, August, $n = 135$, September).

Appendix **D**



MEMORANDUM

State of Alaska
DEPARTMENT OF FISH AND GAME

TO: Lisa Weisler
Project Analyst
OMB-DGC
Juneau

DATE: September 23, 1996

FILE NO.: memo923.961

THRU: Lana Shea Flanders
Regional Supervisor
H&R - Region I
Douglas

TELEPHONE NO: 465-4205
FAX NO: 465-4944

FROM: Andy McGregor
Juneau Area Management Biologist
Commercial Fisheries Management
Development Division
Douglas Office

SUBJECT: Proposed Crab Bay LTF

I am writing this memo to serve as documentation for herring related concerns with the proposed Crab Bay LTF, and to recommend several changes to one of the options that ADF&G and DGC presented to the U.S. Forest Service for operation of the facility. At the time of discussions last year with USFS and DGC about possible conditions to be placed upon a proposed renewed operation of the old Crab Bay LTF, I pointed out that the Tenakee herring population had been extremely depressed during the 1990's. As a result, little herring spawning had been documented in the vicinity of the old Crab Bay LTF during this period. The Department, however, has detailed a long history of herring utilization of this area for spawning and considers it to be a critical core spawning site for Tenakee herring. Thus, the ADF&G has special concerns with proposed activities in the area that could be detrimental to the future viability of these fish. During our discussions I recall concerns being expressed about ADF&G suggesting restrictions for the proposed LTF activity when significant spawning hadn't occurred there in several years.

Well, things have changed and in a BIG way. In 1996 evidence of a dramatic rebuilding of Tenakee herring was obtained during our stock assessment activities. A total of 18.1 nautical miles of shoreline within Tenakee Inlet and along the shoreline of Chatham Strait south of Tenakee was mapped by aerial, vessel, and scuba dive methods. This is the *highest number of linear miles of spawn ever observed in Tenakee*, and is the result of a dramatic recruitment event of Tenakee herring primarily from the 1993 brood year. Herring spawned along virtually the entire shoreline in the vicinity of the proposed LTF, from outer Crab Bay to the mouth of the Kadashan River.

Attached please find two 8 by 10 inch photographs I took that show the active spawn at the LTF site. The department conducts scuba dive surveys of herring egg deposition to estimate biomass of spawning herring in numerous areas throughout Southeast Alaska. In 1996 a total of 16 randomly chosen dive transects were conducted in Tenakee Inlet, and the two transects within 0.5 miles of the LTF had the *highest concentrations and greatest abundance of eggs of any of the Tenakee dive transects*.



McCregor, Andy

To: 'Lisa Weissler@Gov.Alaska', 'Mooney, Phil W.', 'Flanders, Lana C. Shea'
 Cc: 'Jennifer Garland@cochub Alaska'
 Subject: RE: Crab Bay briefing

It was a very good spawn in Tenakee this year. I do have pictures of spawning at Crab Bay this spring which I will bring over. In addition, we documented considerable herring movement within Tenakee during their staging for spawning. For instance, whale activity in late April indicated herring were present in the Crab Bay area. The whales then moved to outer portions of Tenakee Inlet, herring began spawning in several areas along the outer shores of Tenakee Inlet, and the inner portions of Tenakee looked like a desert (no herring or predators visible). At that time we were skeptical spawning would occur at Crab Bay. On May 3 a large body of herring was visible along the north shore of outer Tenakee Inlet quite a few miles from Crab Bay. Still no activity at Crab Bay. On May 4 a major spawn occurred at Crab Bay! This is further evidence that the idea of waiting to stop LTF operations until herring are seen at Crab Bay is not a workable solution.

-----Original Message-----
 From: Lisa Weissler@Gov.Alaska
 To: Andy McCregor, Phil W. Mooney, Lana C. Shea
 Cc: Jennifer Garland@cochub Alaska
 Subject: Re: Crab Bay briefing

There's not much to know other than the FS can't seem to accept a timing window to help protect an important fishery resource. Unless the FS gives some truly compelling reason to make ADF&G change its mind, we're sticking with the latest stip.

Andy and Phil - unless you still want to get together via phone, I think we can just cancel the 10:00 discussion.

Andy - I would like to know the latest on the state of the herring spawn at Crab Bay. It would be great if you have pictures for the Tuesday meeting. Lisa

Reply Separator

Subject: Crab Bay briefing
 Author: LanaCS@FishGame Alaska (Flanders, Lana C. Shea) at CC2MHS1
 Date: 5/15/97 4:40 PM

Although I will be able to attend the 2:30 meeting, I will not be available for the 10 am briefing to bring me up to speed. If busy pay close attention and review the file prior to the meeting. Lana

DGC and ADF&G developed 3 options for the USFS to consider to make the proposed LTF activity consistent with the Alaska coastal management program (Lisa Weissler memo, July 18, 1995). Option 1 involved restrictions of activity during biologically sensitive timing windows when herring spawn and eggs and larvae develop. Contained within this option was the statement that "in any year in which DFG determines that spawning by herring within 1/2 mile of the LTF is imminent or occurring, all log transfer activities shall stop and remain suspended for six weeks". In 1996, despite the large biomass of fish present and spawning activity that took place, the fish showed up at the LTF site with a very minimal amount of staging which would have made it virtually impossible to have halted log transfer activities from affecting spawning activities. Therefore, if this option is considered in the future, it should be modified so that no log transfer activities can occur within the time window even if spawning doesn't appear imminent. Another stipulation in Option 1 is the setting of the time window from April 15 through May 31. Spawning in 1996 was documented occurring through May 14. Given a 3 week period for larval hatch, and a 1 week period for the larvae to develop motility, had the LTF been operational in 1996 the window should have been in place through June 15 to prevent disturbance to developing herring. Therefore I recommend that the time window be further lengthened to April 15 - June 15.

4-2

If anyone wants clarification or further information about this memo, please feel free to contact me.

cc (w/o photos): D.Mecum, R. Larsen, D. Hardy, J. Christner

February 24, 2000

Jim Franzel, District Ranger
USDA Forest Service
204 Signak Way
Sitka, AK 99835

Re: Finger Mountain Timber Sales(s)
Draft Environmental Impact Statement

Dear Mr. Franzel:

Beside me on my bookshelf sits a stack of USDA Forest Service Publications. They look to be well over a foot high. There sits the Draft Environmental Impact Statement for the Finger Mountain Timber Sale(s) (Finger Mountain DEIS), the current Forest Plan, the multi-volume Alaska Pulp Corporation Long Term Timber Sale Contract, the multi-volume Tongass Land Management Plan Revision, 1997, as well as the 1999 Record of Decision amendments to the 1997 plan. In addition there's the slender Annual Monitoring and Evaluation Report for Fiscal Year 1998, dated May 21, 1999. This tower of words, thousands of pages of manuscript, does not even include the planning record documents referenced in the Finger Mountain DEIS. Just looking at the documents that are related to the Finger Mountain Timber Sale and thinking about all the others that I will never see, I can understand why one despairs at trying to comment meaningfully on even one timber sale let alone the multiple harvests planned for the area around Tenakee Springs.

Emma, Tenakee Springs' youngest resident, now 4 months old, could be a participant in a meeting with the Forest Service in a couple of decades where the discussion is about logging what little is left of the Inlet's temperate rain forest. Many of the adult residents of Tenakee and Southeast Alaska have watched vast areas of the Tongass be "developed" into a patchwork of clearcuts. I suspect that most of the comments you receive will reflect a desire to stop this "development" process. So in many ways the comments the Forest Service receives today from Tenakee Springs and elsewhere is an attempt to conserve the Tongass for Emma.

The City of Tenakee Springs

Much, if not all, of what has been written about the socioeconomic aspects of Tenakee Springs in the Finger Mountain DEIS appeared in the Indian River DEIS. Even though the information is the same, the sources have been changed. For example, at Chapter 3, page 45, of the Indian River DEIS and at Chapter 3, page 80, of the Finger Mountain DEIS there is a description of community of Tenakee Springs as follows: *(I have bracketed material that the Forest Service deleted from the Indian River DEIS and underlined material the Forest Service added to the Finger Mountain DEIS)*

The community considers itself unique because members have agreed to limit their personal freedoms for [to maintain] a certain type of community lifestyle. Examples of these limitations include prohibition of [personally

owned] personal ownership of automobiles [within the city], community [establishing] set hours for the use of the natural hot-springs pool, and continuous dedication to staying in isolated community *[I.Garvey, 9/96, p.ets, comm.]*. The people of Tenakee Springs emphasize their uniqueness when advertising for tourism because they feel the unusual sells well and generates more economic dollars to stabilize their community. *[(Nelson 1996)] [I.Harry, B. Scotland, 4/96; J.McBee, 7/96; p.ets, comm.]*

I wrote at length about the Indian River DEIS "personal freedoms" description of Tenakee Springs in my comments to the Indian River DEIS. The Forest Service response to my comments was: "This section has been re-written to accommodate concerns raised in your comments. (Indian River FEIS, Volume I, Response to Public Comments, at 94). It is obvious that other than a few wording changes and unexplained revisions in the source citations the description remained the same.

I have attached a copy of my Indian River DEIS comments as Attachment A. These comments are still relevant to the currently proposed sale because despite the Forest Service's apparent agreement to correct the misimpression caused by the incorrect description of the town, no change has taken place. And I believe that the Forest Service staff continues to view Tenakee Springs as a town out of step with the modern world.

Socioeconomic Cumulative Effects of the Indian River and Finger Mountain Sales

The Forest Service proposes to cut 44.8 million board feet of timber from 2495 acres of forest located directly in front of and behind the City of Tenakee Springs. The logging will occur within a 3 to 5 year period. There will be 3 drive down or low angle log transfer facilities in use along with 3 logging camps in operation during the harvest period. It will take a minimum of 5 years for the visual impacts of the logging to lose their stark contrasts with the surrounding forest. The visual impact will be reduced but not eliminated in that 5 year period. (Finger Mountain DEIS, Chapter 3 at page 80). So if the Indian River logging starts and ends in 2006 and the Finger Mountain logging starts in 2003 and ends in 2008, it will not be until 2015 that even the most serious visual impacts of the Finger Mountain cuts will start to fade. And judging from the amount of accumulated bark still on the marine floor at the Sunny Cove log transfer facility, we will still have the excessive accumulated bark at all of the log transfer facilities.

The residents of Tenakee Springs and any visitors to the Inlet will have experienced nearly a decade of large scale logging in the area immediately around the city of Tenakee Springs. It is disingenuous to argue that tourism will be only slightly affected by the presence of large scale logging and its aftermath to the landscape. Even the Forest Service admits that "the community would probably progressively, then fully recover the yearly loss of income within ten years from the start of the project." (Finger Mountain DEIS, Chapter 3 at page 82). But what is the community suppose to be doing during that decade of lost income. There can be no case built that Tenakee Springs will gain any economic benefit from the logging enterprise.

7-4

So who will? The Financial Efficiency section of the Finger Mountain DEIS is not very enlightening.

Alternatives have a positive net stumpage value under the high market, which generally indicates they are economically viable in these conditions. During low market scenarios, all alternative have a negative net stumpage value, indicating less economic viability under these conditions. (Finger Mountain DEIS Chapter 3 at page 63)

Assuming that there is a "middle market", the net stumpage value looks to be about 0 in all but the high volume cedar alternative (F). The harvesting of cedar would probably result in the timber being sold in the round and exported. For Tenakee Springs and other towns in Southeast Alaska no new jobs will be created and probably there will be a loss of jobs in other commercial endeavors. We are well aware that most of the logging jobs are performed by people who come to Alaska for the logging and generally leave at the end of the harvest. In all likelihood the federal government will need to subsidize the timber contractor. The Finger Mountain sale is not economically viable. And since the predominately hemlock forest of the Indian River sale is less valuable on the "market", that sale is also not viable without substantial government subsidy.

The Forest Service has determined that market demand is not an economic issue. "The market demand is regional in scale" Finger Mountain DEIS, Chapter 1 at page 14 and Chapter 3 at page 104. Yet we are aware that there is no regional demand for cedar and therefore the sale of cedar will probably be permitted outside of the region and even outside of the United States. If the Forest Service subsidizes the Finger Mountain sale in a low or middle market environment, there is not need to consider market demand. The Forest Service will prepare and even subsidize sales independently of any need for the timber. The buyer will be buying at bargain basement or subbasement prices. The supply at such a low cost will most certainly mean that there need not be any demand. If one can buy a widget at below cost and stock pile it for a while one can be certain to make a profit. Of course it is the American people who are subsidizing this type of easy on the pocketbook speculation. Even the short term financial benefit to the state would be "0" under the low market values. (Finger Mountain DEIS, Chapter 3 at page 105). So the state gets nothing, the city gets nothing, and the Forest Service subsidizes the logging contractor. And as a result of the logging the basic economic underpinnings of Tenakee Springs will be adversely affected.

The Forest Service dismisses the potential for an adverse impact on property values in Tenakee Springs as a result of industrial strength logging: "We evaluated this assertion and found no scientific evidence supporting it." (Finger Mountain DEIS, Chapter 1 at page 14) There follows that statement a reference to a discussion of the matter in Chapter 3 of the DEIS. I could find no further mention of the issue.

It appears frivolous to argue that a town which was founded on its scenic location would not suffer adverse impact from the scenery being devastated for decades. Who buys homes in Tenakee and what has happened to prices of property over the last several years? Though not a hard science, there is objective data regarding property values. We do not have a property tax role but there are many people who are quite aware of what every piece of property sold within the last decade. Small uphill lots in

the downtown core now sell for \$400,000. A modest Tenakee cabin on the beach is now in the \$100,000 to \$200,000 range. And who buys the property? Certainly not people who want to look at a clearcut, walk the trail to the sound of logging trucks or helicopters, or fish while dodging log rafts and crew boats. It is not "science" but it certainly is logical that for at least the period of the logging and for several years thereafter prices will be depressed. Some people have thought that logging was finished in Tenakee Inlet. They can see the clear cuts of the past across from the town and much more recent ones as they fly into town. But they haven't seen any active logging in several years. There has been so much logging in Tenakee Inlet that people thought that with the mills closing the value of the forest for its other uses would finally be realized. When it becomes clear that is not the case, who will be interested in high value, low volume fishing, hunting, hiking, kayaking, or eco-touring visits to the Inlet. And who would invest in a home in a town as environmentally and economically devastated as Tenakee Springs will be. (See Attachment B, Comments submitted during the scoping process in 1997.)

The Tongass National Forest: Annual Monitoring and Evaluation Report of 1998, at page 52 states

Growth in tourism and decline in timber harvest and related manufacturing are perhaps the most obvious changes currently occurring in Southeast Alaska but other changes in the regional income structure may be equally important. Chief among these is the steady growth in non-wage income, primarily retirement benefits, income on investment, and medical benefits. These developments have, in turn, fueled an expansion in local services and retail."

Tenakee Springs is ahead of the curve in these changes rather than slow to change as contended by the Forest Service. (Finger Mountain DEIS, Chapter 3 at page 103) Tenakee Springs has traditionally been a retirement and vacation home town. Although there are a range of age cohorts in the town, none of them rely on the timber industry as a means of staying in Tenakee Springs. Probably 100% of those people who have purchased property in the last decade have done so with the idea that Tenakee is a town that epitomizes those scenic and social attributes that make Southeast Alaska unique. Most of downtown Tenakee could probably qualify as an historic neighborhood. Sustained large scale logging as envisioned by the Forest Service in this series of proposed sales would destroy the underlying economic viability of the town. A small town of this size and age can not come back from such a blow and what a loss that would be to Alaska and the Pacific Northwest. As noted in the DEIS "The changes to the tourism opportunities would be long-term as it will take decades for the project area to return to current conditions. (Finger Mountain DEIS Chapter 3 at page 105)

Summary

So what does Finger Mountain Timber Sale really propose? It proposes:

- To clearcut millions of board feet of timber at an economic loss.

ATTACHMENT A

Visions of Tenakee Springs

The draft EIS contains numerous description of the city and citizens of Tenakee Springs. At Chapter 3, page 45 one finds, "Tenakee Springs has a population of 100 people (1997 TLMP). The community considers itself unusual because members have agreed to limit their personal freedoms to maintain a certain lifestyle. Such limitations include prohibiting personally owned automobiles within the city, establishing set hours for using the natural hot-springs pool, and continuous dedication to remaining an isolated community. Tenakee Springs residents emphasize their uniqueness when advertising tourism, because they feel the unusual sells well and generates more economic income to stabilize their community." (Nelson 1996)

The foregoing is an interesting but highly subjective and unsubstantiated description of a town. Let us see if a personal freedom theme is a good fit for Tenakee Springs starting with the automobile limitation. Not many towns in Southeast Alaska can be reached by road. Within the cities, however, cars are in abundance and their streets for decades have been wide enough to accommodate automobile traffic. Such is not the case in Tenakee. That is an historical fact and not one recently created. The trail through town is not wide enough to accommodate automobiles. It is not logical to permit the presence of vehicles that won't fit, without mowing down people walking out the front doors of their houses onto the town's one street. Automobiles are prohibited not as a matter of personal freedom limitation but as a matter of public safety. That is not to say there are not all terrain vehicles a plenty on Tenakee Avenue. Sturdy golf carts as well as whisk people around the downtown. Out on the trail east and west of the downtown, motorized vehicles cannot negotiate the narrow hiking trail surfaces. One doubts that any other town in Alaska would allow cars on trails that are not designed nor constructed for automotive use.

Tenakee Springs is actually at the forefront of alternative modes of transportation. Pedestrian and bicycle traffic are encouraged. The town relies on mass transit such as the ferry system for long distance travel. That type of transportation pattern should be commended not denigrated as a

• To add to the stark adverse visual impact of the past logging in Tenakee Inlet. The addition of an even more "developed" landscape will have a long-term and devastating effect on the visitor industry in Tenakee Springs. 3-2

• To dump bark into the marine environment in areas where herring spawn and commercial and subsistence crab fishing take place. 4-1

• To build new roads which will bring people on logging trucks and later ATVs into contact the brown bear population. This interaction is never beneficial to the bear. 1-7

• To operate log transfer facilities and logging camps that will generate substantial marine and air traffic on Tenakee Inlet. Contrary to the Forest Service conclusion that this traffic will be indistinguishable from current tourist and local use of the inlet waterway, there will be appreciably more contact with marine mammals. Stellar sea lions spend time on the reef directly in front of town and humpback whales are clearly visible bubble feeding in close proximity to both Tenakee Springs and the proposed logging areas. A logger is not likely to fell a tree that will hit a whale or a sea lion but the crew boats, supply planes, barge traffic, log rafts and other commercial use of the Inlet needed for large scale industrial logging over perhaps a decade will most certainly have an adverse effect on these animals. These activities would also have an adverse effect on Vancouver Canada Geese found within sight of downtown Tenakee Springs or the Bald Eagles who can be harmed by helicopter noise. 3-2

• To decimate the growing high value, low volume tourism of Tenakee Springs. 3-3

The Finger Mountain Sale is just one of several sales planned for the Tenakee Inlet. It is just one in a long line of sales dating back decades. It represents outmoded timber management techniques that would not be environmentally, economically or socially acceptable near a small town located anywhere else than in the Tongass.

Selecting Alternative A is the only realistic choice that the Forest Service can make.

Sincerely,

Elizabeth L. Shaw
Elizabeth L. Shaw
1 Park Place
P.O. Box 532
Tenakee Springs, AK 99841
(907) 736-2332

restriction on personal freedom. The federal government through the federal transportation legislation of ISTEA encourages alternative means of transportation as used in Tenakee.

So on to the personal freedom of being able to use the hot springs bathhouse whenever you want. The set hours for the bathhouse regulate when either men or women may use the bath. The bathhouse is available 24 hours a day, seven days a week. I think that the men's and women's hours posted on the bathhouse door represent a Puritan ethic or an expression of the right to privacy rather than a restriction on personal freedom. Coed nude bathing might make Tenakee quite a unique town in Alaska. It is the norm to have public bathing facilities segregated by sex. The Tenakee Springs bathhouse is not a hot tub. It is the town's bathing facility. Public health requires that clothing not be worn in the pool. As a matter of common sense, public health, and civil deportment, not lack of a personal freedom, the bathers have designated separate hours of men and women to use the facility.

So what about Tenakee Springs' dedication to remaining an isolated community. If our desire is to be isolated, we have failed. We are no more isolated than most towns in Southeast Alaska. We have regularly scheduled plane service 7 days a week for most of the year and 6 days a week in the winter. There are charter flights available both for fixed wing aircraft and for helicopters including medevac services. We have telephone service in our homes and direct TV dishes dot the landscape. We have city-operated generators that produce electricity for much of the town. We have scheduled Marine Highway ferry service. Private yachts, fishing boats and cruise ships dock in Tenakee for varying lengths of time. We have barge service and a Juneau trucking company makes weekly deliveries via the ferry system. We receive the Juneau newspaper daily and have postal service six days a week. Admittedly it does take us longer to travel from our homes to New York City than it would for someone from Juneau or Sitka to do the same...about 40 minutes longer.

Tenakee Springs is a small town. That is true. But the author of the foregoing limited freedoms model of Tenakee Springs equates small and remote with isolated and isolating. The author makes the town sound as if it is fighting some type of progress as yet unidentified. The writer confuses true freedoms, such as freedom of speech or the freedom to exercise one's religious faith, with rules of social living or governmental regulations that

ensure the public's health and safety. The writer also appears to be unaware of the current demographic trends in the United States. *Time Magazine* dated December 8, 1997, chose as its cover theme "Why More Americans Are Fleeing to Small Towns." The article regarding the movement to small towns lists reasons that many small towns are gaining new residents. These reasons include tourism, controlled growth, historic buildings, and recreational opportunities. Sounds like Tenakee Springs. The article does not mention the presence of temporary, large scale industry as having a positive effect on a town's economic and social health. In fact many of the towns discussed are recovering from the economic disasters caused by the failure of large industries in their areas.

Another description of Tenakee Springs is found in Chapter 3, page 66, "Tenakee Springs has a population of 111 residents. It is a popular "get away" area and favorite spot for boaters. A number of Juneau residents maintain second homes there. The 1990 median household income was \$18,125. Unemployment in 1994 for this census area was 10.6 percent, compared to 8.2 percent throughout Southeast Alaska (USDA Forest Service 1997a). The major employers are a highly seasonal fisheries and retail trade, and local government. (USDA Forest Service 1997a).

"Proposals for logging in areas close to Tenakee Springs have raised local interest, sentiment, and debate about what mix of values the forest should provide. Some people support a sustainable timber industry to diversify the economics of the local communities. At the same time, there is considerable opposition to clear-cut logging in an area considered to be in Tenakee Springs "backyard." Most, if not all, of the Project Area appears to lie within that area of concern. At the heart of the debate is a sincere and strong desire on the part of most people in the town to maintain their current lifestyle.

"Tenakee Springs residents and the City of Tenakee Springs want to see more emphasis placed on scenic resources, recreation, fish, wildlife, and subsistence. They want the current timber sale program reduced. They do not feel that jobs should be the reason for making forest use decisions. Neither residents nor the City want additional roads, log transfer facilities, or connection to existing roads. They feel that more roads mean more hunter access and fewer deer. They are opposed to emphasis on mining exploration and development, and favor additional Wilderness designation. They want the Forest Service to emphasize tourism, wildlife, recreation, and subsistence

Springs reveals the bias that the Forest Service has regarding how to weigh values in its decision making process. That bias is clearly adverse to the people who choose to live in small, geographically remote towns like Tenakee Springs. The goal should not be for a private industry to be subsidized by the federal government and as a consequence destroy many other private enterprises that do not rely upon federal largesse.

Tenakee Springs will be able to benefit from the demographic changes ahead if the environment around it is not changed in such a way as to discourage tourism or restrict subsistence. It may be that there will be no high paying jobs or multi-million dollar businesses arising in Tenakee Springs. However, Tenakee Springs is a prime example of a small town that can serve the needs of a growing number of people who are willing to earn less money but are willing to do things for themselves. Residents may need to supply food from gardens and subsistence hunting as well as supplement subsistence activities with providing services to eco-tourists or participating in commercial or sportsfishing businesses. This socioeconomic plan for Tenakee Springs is not mirrored in the past but is forwarding looking based on new trends...not on outmoded concepts of resource extraction and depletion as a means for creating temporary jobs.

3-3

Roads

It is my understanding, though it is difficult for lay person to obtain this information from the draft EIS, that a new road will come close to connecting the Indian River road system and therefore Tenakee Springs with other roads on the island. The Forest Service may be keeping the letter, but not the spirit, of the federal law that requires the Forest Service to refrain from fostering a road connection with Tenakee. That residents of Tenakee Springs do not wish to be connected by road with other communities is well known. The town is not built to accommodate automobile traffic nor the other adverse effects that increased vehicle traffic brings.

The cumulative effect of the multiple logging roads that surround Tenakee is to add more and more pressure from people outside the community to exercise their supposed right to drive their cars, or four wheelers or motorcycles into town. Neither the Forest Service nor the logging company

sectors of the economy. Both the City and Tenakee Springs Fish and Game Advisory Committee are concerned with the current and projected future declines in wildlife habitat capability in the area, especially along Tenakee Inlet."

The foregoing description of Tenakee appears to be more objective than the "limited freedoms" description. However, it presents information with little authority for the statements made. "Some people" support a sustainable timber industry while "considerable opposition" exists to clear-cutting in the project area for the Indian River sale(s). How this information was obtained is not clear. But even this supposed objective data is followed by a subjective conclusion that "at the heart of the debate is a sincere and strong desire on the part of most people in the town to maintain their current lifestyle." Here is a theme that will appear again and again in the draft EIS. Those people who identify logging as having an adverse effect on their homes and jobs are trying to maintain a "lifestyle." However, those people who want a sustainable timber industry are trying to provide jobs. It also appears that the term "sustainable timber industry" means the continuation of practices that often do more harm than good to the environment and which currently have no overriding economic benefits.

It is mistaken to say that the people of Tenakee Springs are not concerned about jobs. They are indeed concerned about jobs...about the jobs that they hold as fishers, as guides, as retail merchants, as bakers, as commercial cooks, as massage therapists, as teachers, as cabinet makers, as carpenters, as welders, as office workers and in a multitude of other jobs that are needed to keep the community up and running. These jobs are threatened both directly and indirectly by the proposed timber sale. The above description of Tenakee Springs fails to mention that the interest in wildlife, subsistence, scenic beauty and habitat generally has to do with the increased reliance on the visitor industry in Tenakee. The draft EIS is faulty in that although it identifies the importance of tourism, recreation and other such activities, it does not make any attempt to ensure that these long-term jobs will not be lost. The jobs created by the proposed logging will be mainly held by people who will only live in the area for part each year for three to five years. The tradeoff is a tragic one.

The foregoing discussion of the EIS' descriptions of Tenakee Springs is not an exercise in correcting unimportant details. In fact the descriptions of Tenakee

ATTACHMENT B

FINGER MOUNTAIN TIMBER SALE

My home is located on the hillside above the downtown area of Tenakee Springs. The view from my front porch is the water of Tenakee Inlet and the shoreline across the Inlet. The view is part of the house and part of my investment in the house. I have both an emotional and economic stake in Tenakee Inlet. Portions of the proposed Finger Mountain timber sale that affect my view and my economic investment are perhaps even more important to me than the loggers' interest in a season of employment clearcutting. I will be here for much more than a season. The logging company employees will come and be gone will leave behind decades of a view scape which adversely alters my home. 3-2

The economic and social health of Tenakee affects me. I am not employed in Tenakee but I volunteer my time to garden in the park, crush aluminum cans for the Volunteer Fire Department and serve on city advisory committees. From my vantage point as a volunteer I observe the younger people in this community making their way through combining jobs and creating their own businesses to provide services to the people who live here and the people who visit Tenakee. I benefit from their efforts. I would not be able to live here if there were no carpenters, people who repair heaters or sell groceries. If the town suffers economically it directly affects my life here. 7-4

Late this summer a cruise ship came to Tenakee Springs anchoring out and lightering 100 plus visitors into Tenakee for a couple hour stay. Many of the visitors found their way to the park where I garden. They sat on the benches and stairs in the park and looked out over the Inlet. From my front porch I could overhear their comments about what they saw. They marveled at the vista of the Inlet and the shoreline in the distance. There is no way that I could seriously believe that they would have the same reaction to viewing a patchwork of clear-cut and trees...a view scape that would exist after the loggers have their season of clearcutting. Tenakee Inlet is easy to miss or avoid. If one were planning the course of a cruise ship, one would not include an Inlet whose shore is scarred by clearcutting. Without the view we would be without these visitors in the future. These visitors strolled the trail, chatted with the residents about Tenakee, hiked into the woods to bird watch, enjoyed the summery weather and spent their money in our gift shop, mercantile store and bakery. Although Tenakee is not prepared as yet for the appearance of so many visitors at one time, it is possible for the people here to develop yet even more businesses to cater to the short stay visitor. So the Finger Mountain timber sale not only affects my current economic interest in Tenakee but adversely affects the future economic potential for this community. Economic growth in the form of arts and crafts sales, bird watching and hiking tours, whale watching, historical and nature walks and a hot mineral bath for those so inclined 3-3

In my time of living here in Tenakee I have seen that the community has had to address itself to one resource depletion proposal after another. Those who propose the changes see each change as small, not having a great deal of effect. What difference will some

clear cut areas make, what difference will the commercial harvesting of herring make, what difference will the opening for more roads for logging make, what difference will the use of the log transfer facilities make. Only the people of Tenakee appear to be looking at the entire ecosystem that surrounds them while the proposals by those who wish to gain economically from the resources in this area look only at their proposal. A very short sighted and predictably disastrous way of managing the resources of this Inlet. 11-1

September 7, 1997

Elizabeth L. Shaw
1 Park Place
P.O. Box 532
Tenakee Springs, Alaska 99841

From Eric Syrene &
Tonia Lewis
P.O. Box 251
Gustavus AK 99826

Fully protect important subsistence and sport use of Deer and fish in the area. Take a hard look at the long-term impacts from this, past and other proposed sales planned, not only in Tenakee Inlet, including the Indian River Sale, but throughout the Tongass National Forest.

Design the Timbersale to respond to the economic and social needs of local communities like Tenakee Springs by choosing the CCC Alternative.

Prohibit destructive practices like dumping of logs in the water. Instead the Forest Service should require that all logs from a sale be placed on barges.

Immediate economic & political creations of large scale industry practices have little regard for the natural qualities of life that sustain the lives of all beings living on earth. Habitat quality is of utmost importance in sustainable living not only for us humans now but for future generations and all beings in the nature of a place.

We believe the Forest Service should always give high consideration to such organizations as community associations, SEFCC and citizen inhabitants viewpoints in the planning of the Tongass Forest use. Thank You for your time and consideration. Eric Syrene and Tonia Lewis.

2/25/00
Hello District Ranger, Jim Franzel.

To you as the representative of the Forest Service in regards to the finger Mountain EIS Timbersale issue, I would have you consider my comments.

We live here in Southeast Alaska and regard the whole as a sacred place, very rich and generous in its life sustaining gifts of nature. Sustaining is the key word here. The scale and methods proposed for operations seem stuck in the past ways of disrespectful gluttony. To ignore the efforts and views of those who live in Tenakee Springs area which oppose the proposed sale plans and offered their work of the CCC Alternative is evidence of this. The CCC Alternative is truly an example of respectable forestry practice in sustaining life and livelihood of an integrated environment community. I believe the Forest Service should progress into the age of Sustainable Respectable, Value Added, local economy practices.

Adhere to the worthy ideas of...
No road building or clearcuts in any remaining old-growth, roadless areas, especially Seed Bay. (over-7).

James Franzel, District Ranger
Attn.: Finger Mountain EIS
204 Siglinaka Way
Sitka, AK 99835

February 10, 2000

Dear Sir:

I have been fortunate in spending a week in Tenakee Springs on each of three separate visits over the past few years. The unspoiled beauty of the area added much to my enjoyment.

As an avid sport fisherman and dedicated outdoor enthusiast, I believe that the proposed large clear-cut timber sale in the Tongass National Forest in the vicinity of Tenakee Springs would have a critical adverse effect on the environment... wildlife habitat... sport and subsistence fishing... and the currently pristine drainage in the area. 1-7
2-1
6-1

I know from personal experience on the Olympic Peninsula in Washington the devastating effect clear-cut logging has had on salmon, steelhead, elk and other wildlife habitat.

My family and I feel for friends and residents of Tenakee and can well imagine how the Forest Service's proposed clear-cut timber sale would have a serious detrimental effect on their lives and well being.

As a taxpayer, I want to go on record as being opposed to the Forest Service Alternative "B", and the huge clear-cuts, road building and log transfer facilities it includes. 3-1

A copy of this letter is being sent to my congressman and senators asking them to support the inclusion of the Tongass National Forest in the Roadless Area Policy proposed by the Forest Service.

Sincerely,

Earl M. Smith

Earl M. Smith
5 Knollwood Drive
North Caldwell, NJ 07006

cc: Senator Frank Lautenberg
Senator Robert Torricelli
Congressman Rodney Frelinghuysen

Dear Ranger Franzel:

I wish to object to any further logging or roading within the confines of the proposed Finger Mountain Sale area. This area is important deer habitat, and is important for subsistence purposes. Salmon habitat will also be negatively affected by any alternatives that require clear cuts or more logging roads. In my estimation, there are already too many miles of logging roads in this particular area, and way too many within the Tongass, in general. NO MORE LOGGING ROADS, please. 2-1
3-1

Sincerely,

Florian Sever
1706 Edgecumbe Drive
Sitka, AK 99835

GEORGE F. SNYDER
Box 7304, WILMINGTON, DELAWARE 19803

February 9, 2000

Mr. James Franzel, District Ranger
Attention: Finger Mountain EIS
204 Signhaka Way
Sitka, AK 99835

Dear Mr. Franzel:

We are writing to you today concerning an issue that is extremely important to us and the people of Tenakee Springs, Alaska. Having been a guest at Tenakee Springs, you know first hand what a rich and beautiful area we have here and you have seen for yourself the abundance of fish and wildlife we are lucky enough to enjoy. Unfortunately, the Forest Service and the timber industry are continually chipping away at the habitat our fish and wildlife need to flourish.

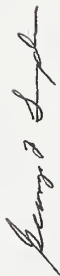
We would like to ask you for a bit of your time to help us with an urgent matter. The U.S. Forest Service is planning a large clear-cut timber sale in the immediate vicinity of Tenakee Springs in the Tongass National Forest. These clear-cuts would affect the beauty, the health and pristine quality of our environment forever and would be subsidized by your tax dollars. The continued destruction of our old-growth forests is having devastating effects on our wildlife, our economy and our sense of well-being.

The Forest Service has released the Draft Environmental Impact Statement (DEIS) for the proposed "Finger Mountain" timber sale. The name of this sale is misleading since all of the proposed logging would occur in Tenakee Inlet at Crab Bay, In-between Creek and the drainage immediately West of In-between Creek in the vicinity of Little Seal Bay.

The Forest Service's preferred alternative ("B") proposes to cut 21 million board feet of timber from 936 acres, to build 21 miles of new road and to reconstruct 13 miles of existing road. The proposal includes log transfer facilities (LTFs) at Crab Bay and In-between Creek, a logging camp at Crab Bay and a floating logging camp in Seal Bay. Alternative "B" includes huge clear-cuts on the face of the mountain directly across from Tenakee and would severely impact the currently pristine drainage in the vicinity of Little Seal Bay.

Our family sincerely hopes that you reconsider this program as it will devastate the area.

Sincerely,



George F. Snyder and Family

Dear District Ranger Jim Franzel,

Please provide full protection for the vital subsistence uses and sport hunting of deer in all areas of this timber sale. Therefore no roads or clearcuts should be allowed in existing roadless areas, especially Little Seal Bay.

The cumulative, long term impacts from this sale, past sales and other proposed sales planned for Tenakee Inlet (including the Indian River sale) should be considered and alleviated in planning this sale.

Incorporate local input in designing this timber sale to respond to Tenakee's economic needs by selecting the CCC alternative.

And finally, prohibit all dumping of logs in the water which decimates the surrounding marine life. Require that all logs be transferred directly to barges, avoiding this unnecessary negative impact on the marine environment.

Sincerely, Jeff Sloss
740 Fifth St.
Juneau, AK 99801

John P. Shedd
PO Box 427
Douglas, AK 99824

February 18, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

I am writing to you concerning the proposed timber sale, Finger Mountain, in Tenakee Inlet. I am not in favor of your plans to log 21.4 million board feet in some of the most important wildlife habitat in the Inlet. The harvest of yellow cedar to be exported in the round makes absolutely no sense.

The people in Tenakee have come to rely on visitors and hunters like myself to support³⁻³ their economy. The destruction of the habitat for wildlife and the loss of pristine old growth forest will stop visitors from going there and therefore have a negative affect on the economy of the town. The few jobs created for workers in other communities does not justify the long term negative affects on Tenakee residents

I understand that an alternative was suggested by local residents for small scale sales that could support some local businesses. I support the residents in either that plan or⁵⁻¹ Alternative A, no action.

Thank you for the opportunity to comment.

Sincerely,

JPS

John P. Shedd



Silver King Marine

Mike Behners
P.O. Box 210023
Auke Bay, Alaska 99821
(907) 785-0165 (Ph. & Fax)



Marine Wildlife Viewing

Jim Franzel Dist. Ranger
USFS.

2/20/2000

Dear Mr Franzel

I have used Tenakee Inlet for hunting for several years and its very obvious what logging impacts are on areas of deer etc

There even has been logging enough. I would urge you to log no more in Tenakee Inlet.

Further, the USFS should build no more roads and have only more sales on existing road systems.

Thank you

Paula Betty

34

Mr. Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel:

I am a 20 year resident of Alaska and a 12 year resident of Sitka, Alaska. I am writing to support residents of Tenakee Springs in their desire to halt the plan to log under the Finger Mountain Timber Sale. I feel that there has already been too much logging and I am opposed to putting in any new roads in the Tongass. Tenakee is in the heart of Chichagof Island which has already seen a tremendous amount of logging. Several of the proposed logging areas and roads are in the currently roadless areas of the Tongass. Logging will damage important wildlife habitat especially for deer and bears. More roads and clearcuts will force their populations out of impacted watersheds for decades. Please stop the logging. We can all enjoy what remains of the roadless areas for recreational purposes. To continue to log the Tongass is to ignore the reality that we are destroying some of our last temperate rain forest and the planetary implications that continued logging has.

Thank you for considering my views.
Sincerely,
Libby Stortz

Ranger Franzel:

Please accept this as my comment on the Finger Mountain Sale. I am in favor of NO ACTION on his sale. It is too important an area for deer habitat and salmon rearing. Too much has already been cut in Crab Bay. I am opposed to any new logging roads in this area. Please listen to the people of Tenakee, as this is their home.

The amount of timber proposed to be taken is way too large. The resulting damage to the forest will be too great. Only the NO ACTION alternative goes far enough to adequately protect subsistence values in this area.

Again, I am in favor of NO ACTION.

Patricia Sever
1706 Edgecumbe Drive
Sitka, AK 99835 747-8466

February 17, 2000

Mr. James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signaka Way
Sitka, AK 99835

Sitkans for a Sound Economy / PO Box 1206, Sitka, AK 99853

2/27/00

Finger Mountain Planning Team
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

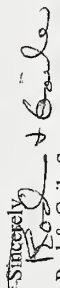
Dear Mr. Franzel:

We own the homestead property located approximately four miles from town up Tenakee Inlet.

Given the closure of the mills in Sitka < Ketchikan and Wrangell, I have to question the need or desirability of the proposed timber offering. 8-1

Tenakee is an extremely pristine, productive, and relatively unimpacted area. The effects of logging, logging camps, log dumps, and road construction will unquestionably have a negative impact on the area. The cumulative impacts of this proposed sale, along with four other possible sales within a 20 mile radius and other previous logging activities, could really have severe impacts on the area. The highest and best use of Tenakee Inlet is for subsistence and recreational use for local residents and nearby communities. 11-1
2-1, 3-3

The Tenakee area has already had more than its fair share of logging activities, as evidenced by all of the roads and clearcuts. Focus your efforts in a different area.

Sincerely,

Rod & Gaile Swope

Regarding: DEIS comments with concerns for both Tenakee Springs and Sitka to be entered into the record, for the Finger Mountain Sales Project.

Dear Team Members,

These are the comments from Sitkans for a Sound Economy (SSE). We believe that the best way to meet the needs of our community is a holistic approach which includes the integration of social, environmental, and economic goals. We believe that the Finger Mountain Project does not make sense for Sitka and its rural area, and the project does not fit into a holistic approach.

After reviewing the proposed Alternatives A, B, D, and F, Sitkans for a Sound Economy must support Alternative A. The only other alternative that comes a distant second to reasonable is Alternative F, and even Alternative F is a long way from satisfactory.

We have found very little in the way of answers to the questions and objections we raised in our scoping comments. Although you may think that some of our questions and objections were outside the range of your scoping, we still feel that they are pertinent to our communities in terms of the effects the Finger Mountain Sales Project will have on us. For example:

1) Looking through your DEIS we could not find any reference to the volume of board feet per acre in areas where your tree extraction (harvest) is taking place. From the look of it, it seems to be generally an area of 25 to 29 mbf/a. Therefore, it continues the scenario of cutting the "best of the rest." It has been long predicted that the Forest Service would do this very thing. Does the Finger Mountain Project exist in a vacuum? **Please explain mathematically how it is that you are not high grading this area?** 11-9

Even though the Forest Service has just recently dropped volume class designations, these designations are still important to the people living in our area. Yet, there seems little information in your approximately 350 page report to bridge the understanding gap. There can be no question that most of the highest value timber has already been taken.

East of Finger Mountain has been extensively clearcut and roughly eighty percent of the high volume old growth (VC 6 & VC 7 as defined by the 1979 TLMP) from there is gone. Around the rest of Tenakee Inlet roughly seventy percent of the high volume old growth (VC 6 & VC 7 as defined by the 1979 TLMP) is gone.

Please include information on volume of board feet per acre in those areas where your sales are taking place in the FDEIS, and explain how the resource extraction principle, that created figures like the 80% and 70% figures, is not pertinent.

11-9

2) You have stated that many units will be done by alternatives to clearcutting. However, a review of the Unit Summary Table in Appendix B shows that in Alternatives B and D the amount of timber volume left standing, in most of these type units, will be roughly the equivalent of two mature trees per acre. In terms of biodiversity and habitat, how is it that those units are not considered clearcuts?

9-1

3) Looking through your DEIS we could find little reference to how the Forest Service actually plans to continue extracting similar premium grade timber in these quantities from the area around Sitka and Tenakee Springs after this sale is done.

8-2

Much of the area's important wildlife habitat has already been significantly fragmented by existing roads. In 1956, almost all (89% or 106,896 acres) of the interior old growth habitat on Southeast Chichagof (120,066 acres) was contiguous, in 50,000 acre blocks or greater. By 1997, there were no blocks of 50,000 acres or more; the largest remaining patch was less than 20,000 acres.

1-1

To maintain our community through the next century and beyond, we cannot dissipate what little resources we have left. There will be little resource inducement for a timber industry to locate in Sitka if much of the NW Baranof timber sales or the Finger Mountain sales are cut. It does not seem possible to go back into those areas (as you say you can do) with the cumulative effects of all the added fragmentation, roads and logging.

8-2

In chapter 3, page 58 under timber potential, you define "productive forest land as land capable of producing 20 cubic feet per acre per year." Just because the Forest Service defines this as being productive timber does not make it so.

Will you please demonstrate how land within the Finger Mountain Project area that grows 20 cubic feet per acre per year will produce productive timber? And at the same sustainable rate and quality (from 1956 to 2000) as those stands you have already taken? How can this be?

8-2

The term "productive forest" has long been called a "big lie," a "big, fat juicy lie," a "fib, a falsehood." How many different ways do we have to say it before the Forest Service will address it? And yes, it is within the scope of the Finger Mountain DEIS because you use it to justify future cutting in that area.

Please explain.

4) You also state under "timber potential" that, "...when evaluating what is available for future timber harvest options... the areas where unevenaged management is prescribed would likely have at least one more harvest (in some cases two more) on the same acres." (chapter 3, p. 58)

In Alternative B there are no unevenaged areas. In Alternative D there are only five unevenaged areas. Moreover, what are the time-tables for another cut the size and quality of the Finger Mountain sales?

When the NW Baranof sales and Finger Mountain sales have further fragmented, roaded, and logged our local forest, where and how will future timber sales with similar quantity and premium grade timber that won't impair wildlife habitat be done? This is an important question, and there is no answer to it in the DEIS.

8-2

Please answer.

5) In our scoping comments, we stated that the Finger Mountain Sales will have little financial benefit to our communities of Sitka and Tenakee Springs. You dismissed this statement as if it had little importance: "Tenakee Springs and Sitka may not benefit directly, but it is likely that some of the indirect employment and income impacts will occur in these communities." (chapter 3, page 106)

Just what does "indirect employment and income impacts" amount to? The risks involved to Tenakee Springs' and Sitka's futures are extremely large, and the financial gains to our communities in return for these risks are petty.

Please note that one of these risks is losing: "leaving choices for future generations," (Chief of the Forest Service Mike Dornbeck) How is it that you can dismiss our many risks, of future returns and present day values, so lightly?

7-4

Please explain.

6) In the DEIS, there are many references to the Forest Plan. In several cases the term is used, as if, to write off responsibility for doing reasonable decision making.

However, TLMP is simply a permissive document and sets only maximum ASQ's not a minimum. In other words, a sales project cannot be compelled into fulfilling a maximum ASQ for a Forest Plan, and likewise a maximum ASQ cannot be used to justify a timber sale.

One, of many examples of how the term Forest Plan is used, is in the defense of clearcutting. "Eliminating clearcutting as a harvest option would severely limit the project's ability to meet Forest Plan objectives. As a result, the issue of clearcutting is beyond the scope of this project." (chapter 1, page 14)

In our opinion, the issue of clearcutting is very pertinent to the scope of this project, and if TLMP does not require a minimum ASQ what does Forest Plan objectives (most of which have already been carried out by past clearcutting) have to do with the importance of not eliminating clearcutting?
Please explain.

9-1

7) Also, under **purpose and need**, you do not provide for economic opportunities for the local areas of Sitka and Tenakee Springs. In fact this sale subtracts from economic opportunities (see our previous scoping comments). Your statement that we will get some indirect benefit (chapter 3, page 106) is never quantitatively demonstrated; and if it were demonstrated, it would prove that the amount is a pitiful one, and not equal to the potential long-term economic gain by our local communities (if unhindered by the Finger Mountain Sales) — much less when compared to the other intrinsic values that we hold just as important (see our Scoping comments).
Please quantify.

5-1

8) Again, under **purpose and need**, you fail to show how future sales would be comparable to the Finger Mountain Sale (much less other historic sales) in terms of an even-flow, long-term sustained basis and in an economically efficient manner.
Please respond.

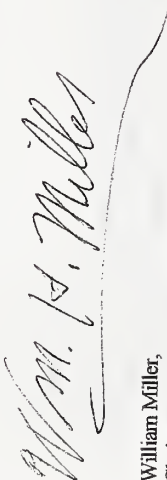
8-2

9) We would like to leave you with this quote:
"I ask each of you to contemplate often, 'remember you are managing the land for seven generations. [280 years]'". Mike Dornbeck (National Leadership Conference, October 27, 1998)

Sitkans for a Sound Economy would like to see more specific information that demonstrates that you have indeed calculated the effects of the cumulative impacts of this type of logging in our local areas for the next 280 years.

11-1

Thank You for Your Considerations,



William Miller,
Chairman

Addendum

We have just learned that the Forest Service has failed to gain the approval of the Alaska Department of Fish and Game on the Finger Mountain Project. SSE will be sincerely watching to see the substance and step by step logical reasoning you will be answering their objections. In some important ways the ADF&G is our scientific representative in this case. SSE believes the ADF&G as a scientific state agency has, at least, some weight of common law oversight. (see also our scoping comments)

Box 55
Tenakee Springs
Alaska 99841

Mr. James Franzel
204 Siginaka Way
Sitka, Alaska 99835

Dear Mr. Franzel,

I am writing in regards to the Finger Mountain sale by the Forest Service. As a resident of Tenakee I live here because of its' spectacular setting and access to so much of the wilderness in Tongass National Forest. The quiet and tranquility of Tenakee Inlet would be shattered by noise pollution if logging is done here. I have lived for years waiting for the logging swaths across the Inlet to grow and no longer be brown, and now they are starting to be green, and you propose more cutting. All of my comments are from basically an aesthetic view for myself and guests who travel long distances to enjoy the scenery, wildlife, and fishing. I know that you are receiving many letters sifting data that show how detrimental the logging will be for habitat and residents of Tenakee, whether they be animals or humans. But where we live is more than just data as "home is where the heart is". You are striking at our hearts, what we value in life. The people in Tenakee have chosen a lifestyle out of love for it, not economics, and logging threatens their lifestyle. Therefore I am in favor of Alternative A, NO ACTION, in the Forest Service Plan.

Sincerely,

Tomi Strong

Tomi Strong

T.F. SMITH

Licensed Master Guide .. Retired
3407 HAILUT POINT ROAD
SITKA, ALASKA 99835

Feb. 24, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel,

From 1960 to 1989, in my 30 years of guiding bear hunters in SE AK, I spent a lot of time in Tenakee Inlet. Before clear cutting took effect, on a 10 day trip I could easily show my client(s) 30 or more brown bears. I guided in all the side bays and practically all of the shoreline in Tenakee Inlet. After the guide season ended, I enjoyed hunting deer there and also some great waterfowl hunting in Tenakee Inlet.

I regret to relate, that due to logging, I witnessed and experienced the impact of much of Tenakee Inlet being changed from a wilderness paradise to a disaster area. A vast amount of prime brown bear habitat was destroyed. The some thing happened to a lot of choice deer wintering area. In the 1980's I was lucky to be able to show my hunter eight brown bears in 10 days. It got so unproductive due to the disturbance of logging that I made fewer trips to that area.

Too much damage has already been done by logging to hunting and recreation values in Tenakee Inlet. Over the long term, clear cuts severely limit guiding, hunting and other recreation. The history of clear cut logging plainly shows that it has cost taxpayers more and taken more out of the U.S. Treasury than it has added to the U.S. Treasury for the benefit of the taxpayers. The public owners have to bear the enormous cost of the National Forest roads with few people profiting from the logging in the National Forests.

The Finger Mountain Timber Sale will profit only a relatively few for a short period of time but great harm will be done to the many users of the Tongass National Forest, especially the residents of Tenakee Springs.

Sincerely Yours,
Janet C. Smith
Janet C. Smith

TENAKEE HOT SPRINGS LODGE

P.O. BOX 3

TENAKEE SPRINGS, ALASKA 99841

(907) 736-2400

February 27, 2000

Dear Ms. Winn,

I am writing to you in reference to the proposed Finger Mountain Timber Sale, which entails logging of old growth trees in the Tongass National Forest. I am concerned about the economic impact of logging on the business that my partner and I have just purchased.

We are the new owners of the Tenakee Hot Springs Lodge. Our guests, many already booked for this year, will be coming from all over the United States to relax, fish and explore in our many small skiffs; to birdwatch and to just generally enjoy the indescribable beauty of this spectacular wilderness area. They will be boating and fishing in Tenakee Inlet and the waters of Crab and Saltery Bays in small crafts, and will fish in our rivers.

The Forest Service's plan to log here will cause noise, the problems that accompany log dumps, and much emotional distress. There will be a change in fish and wildlife forever. Last but not least to us, this logging operation will almost certainly cause very dangerous hazards to our guests in boats, due to the problem of floating and partially submerged logs, as there always is where logging is done. This will also seriously restrict their area of safe travel. In addition to these problems that will be caused by your proposed logging of this uniquely pristine area, I understand that there may be another logging operation at close-by Indian River going on at the same time! As well as up to 2 more nearby!!

My partner and I are extremely concerned that this Finger Mountain Timber Sale that you are proposing could have a disastrous impact on our business. Please reconsider your plans to log in our area.

Thank you.

Sincerely,


 Bob Carr, Owner

Tenakee Hot Springs Lodge

Jim Franzel

District Ranger

Finger Mountain EIS

USDA Forest Service

204 Signika Way

Sitka, AK 99835

Dear Mr. Franzel,

I understand you are the deciding officer for the Finger Mountain EIS. Enclosed are my comments:

I ask you to develop and select an alternative that builds no new roads in the analysis area. There are plenty roads now that the Forest Service has a hard time maintaining as it is. And, we do not need more roads, especially in the Old Growth and roadless areas. Seal Bay, specifically, is one of the few places left that has not been devastated by the Forest Service extravagant timber harvesting practices. Please build no roads in Seal Bay, and do not cut the old growth timber there.

I request that you fully protect the important subsistence and sport use of deer in the area. Tenakee inlet, and the area bays, are destination hunting grounds for the Tenakee Springs residents as well as many of us Juneauites. Please select an alternative in the EIS that fully protects the deer habitat.

Please consider the long-term effects and impacts of all alternatives in the EIS, as well as any that you did not fully develop. I understand that the CCC Alternative was dropped from further analysis and development. I would like to see this alternative be completely developed and analyzed with the others. It would be in the best interest of the Forest Service to do so, as this was the alternative developed by the locals. By dumping this alternative, you are not conducting adequate NEPA, and you are doing a dis-service to the public and the Forest Service. Please reconsider and develop the CCC alternative. The CCC Alternative would best serve the residents of Tenakee Springs.

Please look beyond the immediate goal of getting X number of board feet cut, and evaluate what the long-term impacts will be on the resources and community. It appears that you are only looking at the political pressure to get the cut out, and I am disappointed with that image of the Forest Service. Stop succumbing to the political pressure and do something good for the resources and the people who live in the area, who value the area, who will be adversely affected by the long-term impacts of another political clear-cut. Please select an alternative that best meets the needs of Tenakee Mills and the local community. The Forest Service talks about collaborative stewardship. You can show them how it works by really listening to them and selecting the CCC Alternative.

Please select an alternative that incorporates harvesting strategies other than clearcuts. Selective

P. O. Box 513
Tenakee Springs, AK, 99841
February 20, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

I am emphatically endorsing Plan "A" in your latest "Finger Mountain EIS", which endorses NO ACTION!

My son and I are four year residents of Tenakee Springs, and we rely pretty heavily on subsistence to help us financially, as do most of the residents of our small town. Fishing, hunting, crabbing, shrimp--all are nourishment for our bodies. But just as importantly, the unbelievable splendor and tranquility of this priceless area of the world is nourishment for our souls. Having recently escaped from the world of gangs, drugs, theft, cement, asphalt and scary schools, our new home here in Tenakee Springs Alaska is like Heaven to us. And now you want to take it all away, chunk by chunk, until there is nothing left but stumps! Or even less! "Timber Sales" as you refer to this awful logging Well, I think a better name for it would be "Timber Slaughter."

I wonder what has happened to the Forest Service that I knew as a child--protectors of our great National Forests? It seems now all that you care about is the Almighty Buck--and I certainly don't mean deer! Now instead of being protectors, you seem to be the enemy of all of our forests. So now you plan to clear-cut, clear-cut "with reserve", or "Meadow Enhance", as you call it. And build roads in our most pristine areas around Tenakee Springs Inlet. Clear-cutting "with reserve" means that you will take all the good (large and healthy) trees of value and leave skinny pecker poles standing. Big Deal! Everyone knows these will just blow down in the next windstorm. 21,000,000 board feet of valuable yellow cedar over a 936 acre area. That is a loss of a lot of trees! Also a loss of a lot of fish, crabs, shrimp, deer--a great loss of our subsistence. Also a great loss of eagles, otters, marten, mink, etc., etc., etc.--a great loss of creatures from our Last Frontier. Besides the total ugliness that your clear-cut areas will cause forever, the change in habitat will also forever be affected.

The log dumps. Besides the bark that will cover the sea bottom, smothering it, there will for years be loose floating logs as well as deadheads floating around in the inlet. How nice! And By all means export our valuable yellow cedar to Japan! I've heard that just a few years back yellow cedar was not valuable at the time, so you poor people had to burn it in huge piles. It burned and burned for months and months. Of course as is the case on this, your latest "Timber Slaughter", none of our local craftspeople will get a chance to buy any of the wood, and your Finger Mountain Timber Sale won't provide any of us local people jobs. Only heartaches. And hunger. And emotional turmoil and money.

harvesting, patch cuts, and other timber management prescriptions can provide economic influx into the community, as well as meet resource management objectives and at the same time enhance the ecosystem for wildlife and sustainable timber production. The cedar is scarce in SE Alaska, we can not afford an alternative that allows it to be clear-cut and shipped out of State. KEEP IT LOCAL!

Do not allow the dumping of logs in the water in the Tenakee Inlet and area bays. The Forest Service knows the adverse impacts this has on the biology of the water and ecosystems. Please do not ignore these known devastating consequences. All waters in the Tenakee Inlet would suffer from this, and the fisheries resources would take the brunt of it. Those bays, like Seal Bay, are important crab pot fisheries, as well as Halibut and other sea life. The sea lions would suffer from the adverse impact to their habitat too. Require all logs from the sale to be placed on barges to prevent the smothering of the sea floor. Tenakee Springs residents rely on the fish and wildlife for subsistence. Select an alternative that best protects those resources they depend on.

I am not against logging. I approve of it and support the economic value of it for the communities in the area. Please make the right decision that keeps the harvested logs local for local consumption and jobs. Do not select an alternative that causes the logs to go out of SE Alaska. It's best for the economy of SE Alaska, and the Forest Service credibility, to keep it local.

You are the deciding officer, Jim. Not Murkowski, as you have led many folks to believe. Be honest with the people you serve. Do not succumb to the political pressure by making a choice that scores points with Murky. Those ridiculous days are over, it's time to make a positive difference. Make a decision that scores your support with the community of Tenakee Springs and the others, including myself, who appreciate the natural resources there.

Sincerely,



Laurie Thorpe
PO Box 32031
Juneau, AK 99803

P. O. Box 513
Tenakee Springs, Alaska, 99841
Page 2

The visitors that come charter fishing will just not come during the years of noise and disruption in the water as well as in the air, and with the hazardous boating conditions. If even fishing is possible with all that commotion going on. I question if they, as well as the businesses reliant on them can stay in operation when there are no customers.

As the final act, by all means put lots of roads in the gorgeous, totally untouched area of Little Seal Bay watershed area. Do this as you will have done Crab Bay, Inbetween, Indian River and all other areas around here that you will have ravaged and plundered.

Come to think of it, why not just cement and asphalt all of it all over around here. Then paint yellow lines all up and down the cement and asphalt. And put up Stoplights! By all means! Gee, before long we can be rid of all those awful old trees and have an area filled with really wonderful things--gangs, drugs, theft, asphalt, cement and scary schools!!

Thanks a lot!

Sincerely,

Marilyn T. Taylor
Marilyn T. Taylor
Tenakee Springs Resident

P. O. Box 513
Tenakee Springs, Alaska, 99841
February 20, 2000

The Honorable George Miller
U. S. House of Representatives
Washington, D. C., 20510

Dear Representative Miller,

We so enjoyed and appreciated your visit of last summer to our small town of Tenakee Springs, Alaska. Your warmth and caring nature showed through, and that day I was very proud to have been a California resident for 53 years. I am glad that you were able to see our beautiful little area in the Tongass National Forest. We greatly appreciate all you have done to help us in our struggle to keep our beautiful and unique corner of the world as it is now.

We are currently under siege by the Forest Service again. They are now going to clear-cut two remaining old growth forest areas within the vicinity of Tenakee Springs. One of them is Crab Bay, which is that beautiful area directly across Tenakee Inlet from Community Hall, where we were visiting with you on that pleasant sunny afternoon. They also plan to log Inbetween and Little Seal Bay watersheds, which are just west of Crab Bay and were also within our view.

All told, they plan to clear-cut 21,000,000 board feet of old growth trees over an area of 936 acres. This will leave a visual scar forever in Tenakee Inlet, and will drastically affect the habitat. Most of us local residents rely quite a bit on fishing, hunting, crabbing and shrimping for subsistence. The Forest Service plans to have two log dumps, one of which will entail the dumping of logs directly into the water. The bark will smother the sea floor, to say nothing about the problem of loose and half-submerged logs floating in the inlet. None of the wood from this "timber sale" will be available for local craftsmen, and it will not provide us with any jobs.

There is a lot of now-valuable yellow cedar in these three areas, and the plan is to export these logs in the round, some most likely to Japan. A few years back cedar was not very high in value, and after the Forest Service had had them cut down they just burned them. There were huge fires that burned and burned for months!

1-25-00

Fred S. Salinas
Assistant Forest Supervisor

Dear Sir,

I attended the Finger Mountain Timber Sale Draft EIS meeting in Tenakee Springs yesterday, and I would like to go on record in opposition to this sale. To begin with, I feel that the Chichagof Conservation Councils proposal should have been considered, but it wasn't. A small sale that would benefit the local area with the locally available lumber, especially yellow cedar, would be a plus for the community (Tenakee Spgs.). All the Alternatives will have a negative effect on Tenakee (except, of course, Alternative A, which I'm sure received no consideration).

Your preferred Alternative B is the worst alternative because of the road building in the In Between area. That is really prime deer hunting territory and there are pretty good anchorages close by. A lot of Tenakee people rely on that area for subsistence hunting, and road building and logging in that area would pretty much ruin that. Except for Alternative A, Alternative F is the best, but I still cannot support that one either. Somehow I get the feeling that the worst possible alternative is first designated as the preferred one, then it seems that you are compromising when you choose a "less bad" alternative, and we're supposed to feel like we won a victory.

But, back to the Timber Sale. I think you should really change the name of it to the Tenakee Inlet Sale, as that is what it really is. I have major concerns that were not adequately addressed in the Draft EIS regarding the effects of the sale on the whales, waterfowl, eagles and other less visible wildlife. What about the cumulative effects of the Finger Mtn. and the Indian River Sales? I'm concerned about the noise and the degradation of our quality of life in Tenakee. How do you put a value on looking out your window and seeing a forest vs. a clearcut? Having that clearcut is like having a big scar on the back of your hand - every time you look at your hand, that is what you see. It is Quality of life that is important to me. I think that Tenakee has paid the price already.

Thank You

Sincerely,

Patrick M. Taylor

Patrick M. Taylor
PO Box 641
Tenakee Springs, Ak. 99841

P. O. Box 513
Tenakee Springs, Alaska, 99841
Page 2

One of the most heartbreaking aspects of all of this is the planned road building and clearcutting in Little Seal Bay watershed, because it is now a roadless and unbelievably pristine area where many of us locals now go just to enjoy the splendor of it. It is also important for subsistence for us.

May I ask you to again please help us? Would you please support the inclusion of the Tongass National Forest in the proposed Forest Service plan to protect the remaining roadless areas in the National Forests? Would you also think about introducing a bill that would prohibit the exportation of red and yellow cedar in the round from Alaska?

Thank you again for all you do to help us. Please plan to come back and see us whenever you get a chance. We thoroughly enjoyed having you here, and we have some really wonderful potlucks!

Sincerely Yours,

Marilyn T. Taylor

cc: Jim Franzel, District Ranger
USDA Forest Service

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
JUNEAU REGULATORY FIELD OFFICE
JORDAN CREEK CENTER
8000 GLACIER HWY, SUITE 100B
JUNEAU, ALASKA 99801-8079
January 25, 2000



ATTENTION OF

Regulatory Branch
East Section
9-000017

Mr. Michael Shephard
U.S. Forest Service
201 Katlian, Suite 109
Sitka, Alaska 99835

Dear Mr. Shephard:

This is in response to the December, 1999, Finger Mountain Draft Environmental Impact Statement (DEIS), describing a proposed timber sale near Tenakee Springs, Alaska. The Corps of Engineers' regulatory authorities that relate to timber harvest operations, are based on two laws. Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits the obstruction or alteration of navigable waters of the United States (U.S.) without a permit from the Corps of Engineers. In addition, Section 404 of the Clean Water Act (33 USC 1344) prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a Department of the Army permit.

Alternative B (the proposed alternative) would require the construction of 9.8 miles of system roads, 10.9 miles of temporary roads and the reconstruction of 13.4 miles of existing roads to accommodate 1,027 acres of timber harvest. The 13.6 miles of road construction would occur in wetlands, which would require 161 stream crossings, and 385 acres of timber harvest would occur in wetlands. After harvest activities are completed, 14 miles of roads would remain open but the other roads would be closed to motorized vehicles. The road system is not connected to any public or community road system or to any ferry system terminal. Alternative B also proposes to construct two log transfer facilities (LTFs) including a temporary drive down ramp at Inbetween Creek and a reconstructed bulkhead at Crab Bay for barge use. A floating barge camp located at Seal Bay is also proposed.

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include "muskegs", forested swamps, fens, marshes, bogs and similar areas. Normal silviculture activities for the production of forest products that are part of an established ongoing operation are not subject to regulation under Section 404 of the Clean Water Act. To fall under this exemption the activities must not convert an area of the waters of the U.S. to a use to which it was not previously subject, whereby the flow or circulation of waters of the U.S. may be impaired or the reach reduced.

F 10-5-7-7-2

The DEIS states that the proposed roads avoid unique or high value wetlands (such as rich fens and estuaries) but could not avoid all wetlands. We requested additional information on Roads 76054, 7605 and 75607, since our preliminary analysis indicated that wetland impacts may be able to be further reduced by shifting the roads slightly. Your January 20, 2000, response states that Road 76054 is constrained by a break in slope that gets significantly steeper to the east, and that Road 75607 could not be relocated because of the required switchback location and the grade. You also indicated that Road 7605 is at 10% grade and shifting it north would make the grade infeasible and that there are slope failure concerns to the north.

The construction or maintenance of forest roads used for the sole purpose of timber harvest activities is exempt from regulation under Section 404 of the Clean Water Act, provided the roads are constructed and maintained in accordance with Best Management Practices (BMPs) listed at 33 CFR 323.4(a)(6). These BMPs are necessary to assure that flow and circulation patterns and chemical and biological characteristics of waters of the U.S. are not impaired, that the reach of the waters of the U.S. is not reduced, and that any adverse effect on the aquatic environment is otherwise minimized. The removal of culverts, construction of waterbars and installation of gates, tank traps or other access control methods are indications that roads are being constructed for the sole purpose of timber harvest activities and are exempt from regulation under Section 404 of the Clean Water Act. Compliance with the enclosed BMPs is also required.

Corps of Engineers authorization is required for certain components associated with this timber sale including the LTFs at Inbetween Creek and Crab Bay, the floating barge camp at Seal Bay, log rafting areas, and the land based logging camp near the Crab Bay LTF if it would impact wetlands or other waters of the U.S. Accordingly, you will need to submit a complete DA permit application, including detailed drawings accurately showing the above project components that would occur in waters of the U.S., including wetlands, for our evaluation and Clean Water Act Section 404(b)(1) guidelines compliance determination. Enclosed is a copy of our Regulatory Program Applicant Information pamphlet, which includes a permit application. This pamphlet is designed to assist you in applying for a DA permit and provides general information and guidance on how to complete the permit application.

We appreciate the opportunity to comment on the DEIS and are available for further discussion or clarification of our comments or regulatory requirements, as necessary. If we can provide further information, please contact me at the above address, by telephone at (907) 750-4490, or by FAX at (907) 790-4499.

Sincerely,

R. Thompson
Ralph W. Thompson
Field Office Manager



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

March 8, 2000

Reply To
Attn Of: ECO-088

Lisa Winn
Sitka Ranger District
Tongass National Forest
201 Katlian
Sitka, Alaska 99835

Dear Ms. Winn:

We have reviewed the draft Environmental Impact Statement (EIS) for the proposed Finger Mountain Timber Sale(s) in accordance with our responsibilities under the National Environmental Policy Act and §309 of the Clean Air Act. The draft EIS includes Forest-wide and area-specific goals of supplying timber, recreational opportunities, and natural-resource employment opportunities. The draft EIS was drafted in response to terms of the Settlement Agreement (filed May 16, 1996) in the case of *Alaska Wilderness Recreation and Tourism Association (AWRTA), et al. v. Morrison, et al.*

Based on our review, we have rated the supplemental draft EIS, EC-2 (Environmental Concerns - Insufficient Information). This rating and a summary of our comments will be published in the *Federal Register*. We are primarily concerned that existing and proposed roads may lack funding sufficient to prevent impacts to water, wildlife, and fish. Moreover, we recommend that the EIS discuss potential project impacts to Essential Fish Habitat (EFH) as required by NEPA and the applicable provisions of the Magnuson-Stevens Act, and describe impacts to the substrate, chemical composition of the water, and macro invertebrates found in the benthos from bark and woody debris deposited around past and proposed Log Transfer Facilities (LTFs).

Roads

We recommend that the EIS reconcile proposals found in the EIS to build or reconstruct significant miles of road when the Forest Service is currently limited by inadequate funding to maintain existing roads and Forest Service proposals exist at the national level that redirect the Agency's road policy away from supporting logging. Alternatives B, D, and F propose to build 20.6, 14.7, and 4.3 miles, respectively, and reconstruct 13.4, 12.6, and 9.1 miles, respectively. Expanding the road system in the National Forests seems inconsistent with information found on the Forest Service web page: the Forest Service has at least an \$8.4 billion maintenance and reconstruction backlog and receives only about 20 percent of the annual funding needed to maintain the existing road system to current environmental and safety standards.

Section 404 of the Clean Water Act Exemptions Best Management Practices for Forest Road Construction 33 CFR 323.4(e)(6)

33 CFR 323.4(e)(6). Identifies Best Management Practices (BMPs) which must be met in order to claim an exemption from Section 404 permitting requirements for forest roads which are constructed for the sole purpose of silvicultural activities.

- i. Permanent roads, temporary access roads, and skid trails in waters of the US shall be held to the minimum feasible number, width, and total length consistent with the purpose of specific farming, silvicultural, or mining operations, and local topographic and climatic conditions;
- ii. All roads, temporary or permanent, shall be located sufficiently far from streams or other water bodies (except for portions of such road which must cross water bodies) to minimize discharges of dredged or fill material into waters of the U.S.;
- iii. Road fill shall be bridged, culverted, or otherwise designed to prevent the restriction of expected flood flows;
- iv. Road fill shall be properly stabilized and maintained during and following construction to prevent erosion;
- v. Road fill shall be made in a manner that minimizes encroachment of heavy equipment within waters of the U.S., (including adjacent wetlands) that lie outside the lateral boundaries of the fill itself;
- vi. Vegetative disturbance in waters of the U.S. shall be kept to a minimum;
- vii. Road crossings shall not disrupt the migration or other movement of those species of aquatic life inhabiting the water body;
- viii. Borrow material shall be taken from upland sources whenever feasible;
- ix. The discharge shall not take, or jeopardize the continued existence of a threatened or endangered species as defined under the Endangered Species Act, or adversely modify or destroy the critical habitat of such species;
- x. Discharges into breeding and nesting areas for migratory waterfowl, spawning areas, and wetlands shall be avoided if practical alternatives exist;
- xi. The road fill shall not be located in the proximity of a public water supply intake;
- xii. The discharge shall not occur in areas of concentrated shellfish production;
- xiii. The discharge shall not occur in a component of the National Wild and Scenic River System;
- xiv. The road fill shall consist of suitable material free from toxic materials in toxic amounts;
- xv. All temporary fills shall be removed in their entirety and the area restored to its original elevation.

One may hypothesize in the absence of Tongass-specific information that the Forest Service currently maintains less than four miles of the 17 miles of system roads now found in the project area to safety and environmental standards. It also suggests that funding would limit the Forest Service's ability to maintain more than five miles of the 20.6 miles of roads it proposes to newly construct and less than three miles of the 13.4 miles of roads it proposes to reconstruct as part of the preferred alternative (Alternative B). The inadequately maintained 41 miles of road presented in this hypothetical scenario would likely exacerbate impacts caused by roads: threats to species and water quality and the degradation of wilderness areas associated with roads -- especially since all action alternatives propose building approximately 1/3 of specified and temporary road miles on high hazard soils.

6-1

We recommend that the EIS complement descriptions of maintenance levels found in the road cards by describing the condition of existing roads and predicted condition (based on resource projections) for roads proposed for construction and reconstruction with implementation of proposed alternatives. The EIS should characterize 1) maintenance history of roads and 2) their condition by including road densities, number of miles of roads meeting safety and environmental standards, and problem areas associated with roads (e.g., slumps, washouts, etc.). We believe this information is necessary to accurately and fully describe the affected environment (40 CFR 1502.15) and the cumulative impacts (40 CFR 1502.16 and 1508.8) of the road system as required by NEPA.

11-7

Nationally, the Forest Service has recognized the deleterious effects of road construction and use and is currently implementing two policies to lessen the impacts caused by roads: the Roadless Initiative, and the proposed Roads Policy. We recommend that the EIS reconcile proposing to add up to 34 miles of road to an existing 17 miles in the project area when the Forest Service lacks funding to maintain existing roads and is redirecting its road policy to emphasize recreation and habitat over logging. Finally, we recommend that project proponents favor not building roads (i.e., adopting Alternate F), and obliterating roads if analysis in the EIS reveals that insufficient resources exist to maintain existing roads to standards.

Essential Fish Habitat

We recommend that the EIS demonstrate that proposed alternatives would meet the requirements of the Interim Essential Fish Habitat (EFH) Provisions of the Magnuson-Stevens Act. Our review found that the EIS lacks any discussion of the project's potential impacts to EFH for herring, anadromous salmon, and other marine species. Regulations at 40 CFR 1500.2(c) requires that federal agencies integrate the requirements of NEPA with other required planning and environmental review procedures, and EFH Provisions (50 CFR 600.905) requires that federal agencies consult with the National Marine Fisheries Service (NMFS) when proposed activities could impact the EFH of marine species included in a Fishing Management Unit. We recommend that the EIS include information necessary for consultations with NMFS: 1) a description of the proposed activity; 2) an analysis of the effects, including cumulative effects, of the proposed action on EFH, the managed species, and associated species, such as major prey

4-4

species, included affected life history stages; 3) the Federal agency's views regarding the effects of the action on EFH; and 4) proposed mitigation, if applicable (50 CFR 600.920, g, 2).

In this case, harvest, road construction and use, and log transfer activities could impact marine species at the three levels defined in the definition of "adverse impacts": directly, indirectly, and at the site-specific or habitat-wide level. EFH regulations state that activities which adversely affect EFH should be avoided if less environmentally harmful alternatives exist. The EIS should demonstrate through analysis that proposed alternatives would not impact EFH (50 CFR 600.815, 7, ii).

11-7

Log Transfer Facilities

The EIS should expand its discussion of Log Transfer Facilities (LTFs) to include information about bark build-up and impacts to the benthic and marine environments from past LTFs, potential impacts associated with using different types of log transfer facilities at each proposed site, essential fish habitat requirements associated with log transfer facilities (especially for salmon), and new NPDES permits and measures to comply with the new permits.

4-2

We recommend that the EIS describe in greater detail impacts caused by LTFs formerly sited in and around the project area to meet NEPA requirements for describing the affected environment (40 CFR 1502.15). Understanding past impacts is necessary to successfully describe the cumulative impacts of a project as required by NEPA (40 CFR 1502.16 and 1508.8). The EIS contains little information on the history of LTFs in the project area and the impact of bark buildup on the marine environment. Impacts of LTFs include 1) disruption of biota during log transfer and storage, 2) leaching of soluble materials that may be toxic, and 3) loss of bark and resultant effects on the benthos (Jackson, 1986). We recommend that the EIS include full discussion of significant environmental impacts to the affected environment at past LTF sites by using the following parameters: 1) measurements of bark and organic accumulation; 2) measurements of the concentration of organic log leachates, biological oxygen demand, dissolved oxygen, and hydrogen sulfides; and 3) a comparative survey of the kinds and relative abundances of benthic organisms.

EFH regulations state that "disposal or spillage of any material (dredge material, sludge, industrial waste or other potentially harmful materials) which would destroy or degrade EFH should be avoided" (50 CFR 600.815, 7, ii). National Marine Fisheries Service staff stated that this language encompasses bark accumulation and woody debris from LTFs and that Tenakee Inlet constitutes EFH for salmon species. We recommend that the EIS explicitly reconcile proposed LTF activities with EFH regulations prohibiting spillage that would destroy or degrade EFH by demonstrating that proposed alternatives would not adversely impact pink, sockeye, chum and coho salmon, and other applicable marine species. In addition, analysis should show that impacts to herring and other species would not adversely affect, due to predator-prey relationships, EFH and threatened and endangered species.

4-4

Finally, we issued two National Pollutant Discharge Elimination System (NPDES) general



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1689 C. Street, Room 119
ANCHORAGE, ALASKA 99501-5126

ER 00/21

February 25, 2000

Mr. James Franzel
Sitka District Ranger
USDA Forest Service
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel:

The Department of Interior (DOI) has reviewed the November 1999, Draft Environmental Impact Statement (DEIS) for the Finger Mountain Timber Sale. The U.S. Forest Service (Forest Service) proposes to harvest between 10.9 and 21.4 million board feet (MMBF) of timber from 827 to 1,036 acres, and construct up to 20.7 miles of new road. Associated with this project is the use of an existing permitted log transfer facility (LTF) site at the Crab Bay site on Tenakee Inlet, and the development of a new LTF near Inbetween Creek. The project area is located on Chichagof Island, about 38 air miles north of Sitka, 24 air miles northwest of Angoon, and 3 air miles southwest of Tenakee Springs.

As you may know, over the past several years, a U.S. Fish and Wildlife Service (FWS) representative has participated in interagency meetings and conducted field reviews for the Finger Mountain Timber Sale. We appreciate the opportunity for FWS's early involvement in this process.

We offer the following comments for your consideration:

OLD GROWTH HABITAT

DOI is concerned about the cumulative effects of the action alternatives, specifically with Alternative B (Proposed Action and Preferred Alternative), when viewed in combination with the previous timber harvest in the project. Issues we believe should be further addressed in the Final EIS include geographic distribution of past and proposed timber harvest; disturbance regime; conversion of large, contiguous areas to second growth; fragmentation of remaining old growth blocks and corridors; and disproportionate harvest of alluvial spruce stands. These issues are discussed individually below, along with our suggestions on how to modify the proposed action to address these concerns.

11-1

permits for Alaskan log transfer facilities (LTFs) that become effective March 21, 2000. The permits authorize the discharge of bark and wood debris, as well as the incidental discharge of petroleum products and sediment, into both near-shore and offshore marine waters in Alaska. Permitted facilities are also required to develop and implement pollution prevention plans and to restrict their discharges to inside the perimeter of their delineated "project area." Additional controls will be required if annual monitoring shows that one acre of continuous coverage and deposits 10 cm or greater at any point are exceeded.

4-2

We issued two different permits to acknowledge the differences between facilities permitted prior to October 22, 1985 and those operating with permits issued after that date. The LTFs with permits issued prior to October 22, 1985 are automatically covered on March 21, 2000 under the pre-1985 general permit and shall operate under the conditions of the old permit as well as the new general permit. These facilities must notify the EPA that they are still in operation.

The LTFs not possessing a permit prior to October 22, 1985 will be authorized to discharge under the post-1985 general permit only after they file a Notice Of Intent for coverage with the EPA and the Alaska Department of Environmental Conservation (ADEC), and/or they receive a notification of permit coverage from the EPA. The EPA has the option to automatically cover these facilities without receiving the Notice of Intent application.

4-2

Please contact Chris Gebhardt at (206) 553-0253 if you have any questions. Thank you for the opportunity to review this draft EIS.

Sincerely,

Richard B. Parkin, Manager
Geographic Implementation Unit

Geographic distribution of timber harvest

Previous timber harvest in the project area was concentrated below 800 feet in elevation in the major watersheds (DEIS Chapter 3, pages 14 and 57). The Preferred Alternative proposes to clearcut harvest an additional 548 acres within the 0- to 800-foot elevation band (DEIS Chapter 3, page 57) and USDA Forest Service 1997b, Figure 4-5). At the landscape level, the past and proposed cutting is a disproportionate harvest in this elevation class. Forested areas below 800 feet contain the most valuable old growth habitats for many wildlife species. In particular, habitats below 800 feet have the highest capability for supporting Sitka black-tailed deer (Schoen and Kirchhoff 1990). Schoen and Kirchhoff (1985) reported a mean elevation of 720 feet for wintering deer during a low snow winter and 450 feet during a deep snow winter. The amount of timber harvest at the lower elevations is an important consideration for deer and other species needing habitat cover during the winter (DEIS Chapter 3, page 14). Valuable old growth habitat in this elevation class will be reduced by the proposed timber harvest. DOI recommends that the Forest Service not differentially cut low elevation (0-800 feet), high volume old growth.

Disturbance regime

Blowdown is the most important natural disturbance process occurring on Chichagof Island. The high-frequency, low-intensity disturbance regime typically affects individual trees or small patches of trees (Alaback 1993, Harris 1989). The amount and size of past clearcut harvest units in the project area greatly exceeds the amount of disturbance that would be expected through natural disturbance. Past clearcutting differs from natural disturbances in that it represents a large-scale change (up to 100 or more acres) rather than dispersed small (1 to 20 acres) partial blowdown patches (DEIS Chapter 3, page 10). It is realistic to assume that timber harvest using even-aged management has the potential to shift ecosystem conditions (at the project level) away from the natural range of wind disturbance (USDA Forest Service 1997b). The most significant human disturbances affecting the current project landscape condition are timber harvest and road construction (USDA Forest Service 1997b). The selection of a silvicultural system for any given stand should be based in part on the natural disturbance regime of individual sites to accommodate the effects of future natural disturbances as they interact with the neighboring managed stands (Swanson and Franklin 1992). Patterning management after natural disturbance regimes is a tenet of ecosystem management. Therefore, consistent with TLMP, DOI recommends that future forest management practices more closely emulate patterns of natural disturbance.

Conversion of large contiguous areas to second growth

Most of the harvest has occurred within the past 30 years (DEIS Chapter 3, page 57). Approximately 1,700 acres of harvest occurred between 1950 and 1989. Clearcut harvest along the beach and estuary fringe between Saltery and Crab Bays in Value Comparison Units (VCUs) 231 and 232 was conducted between 1958 and 1965. Most of the harvest in VCUs 233 and 234 was concentrated on large colluvial/alluvial/coastal surfaces; it occurred between 1977 and 1979. The Inbetween drainage (VCU 230) was harvested in 1986.

Even-aged harvest methods, such as clearcutting, do not provide suitable vertical forest stand structure, species composition, and connectivity at the project level. Even-aged timber harvest in the project area would remove high-volume, mature timber stands that provide important wildlife habitat; add to the existing amount of closed-canopy young-growth stands; and put the second growth stands into the same ecological time frame as the 1970-1979 harvest entries. Ecologically, understory production is reduced to extremely low levels when the conifer canopy closes at about age 20 to 30 years, and remains extremely low for at least the next 100 years. After 20 years in a tree overstory begins to close, decreasing the amount of light reaching the forest floor, resulting in a rapid reduction of understory biomass. Even-aged forests (30 to 150 years old) produce the least understory vegetation (Alaback 1984). Consistent with TLMP, DOI recommends that the Forest Service utilize alternatives to clearcutting, due to the amount of past even-aged harvest that has occurred in the project area.

Fragmentation of remaining old growth blocks and corridors

Residual old growth in the project area and its location in relation to artificial and natural openings in the forest is important for maintaining biodiversity. It is crucial to consider spatial arrangements of unmanaged forested areas relative to roads, harvested areas, beaches, and natural openings in the forest. Connectivity among old-growth blocks is an important component of a landscape conservation strategy (Kiestner and Eckhardt 1994, Lidicker 1995). Interior or core old growth refers to those acres that are sufficiently buffered from these openings that conditions such as air temperature, moisture, understory composition, windspeed, and amount of sunlight are unaffected by the conditions in the openings (USDA Forest Service 1997). Core old growth is distinct from "edge" old growth, where the structure of the canopy may be similar to that found in the core, but the nearness to openings alters the understory and microclimate conditions (Concannon 1995). Natural fragmentation must be clearly understood before further management-induced fragmentation can be properly evaluated (Kiestner and Eckhardt 1994).

The fragmentation issue for VCUs 233 and 234 results from previous clearcuts and the proposed harvest units especially within the 0- to 800-foot elevation range. Both sides of the valleys in VCUs 233 and 234 are steep, well drained with mixed conifer (western and mountain hemlock) as the predominant component. Both sides of Fog Creek and South Crab Creek have been impacted by the previous clearcuts. Both watersheds are used by deer, marten, and other wildlife traveling from the higher alpine areas to winter use areas (thermal cover and canopy snow interception) located at the lower end of the watersheds. The remnant stands between the existing clearcuts provide important travel corridors for wildlife (deer, bear, and marten) moving up and down the watersheds, from the south (Broad Finger Creek and Broad Creek drainages), and movement across watersheds (Fog Creek to South Crab Creek). Fog Creek has the longest travel corridor compared to South Crab, Inbetween, or Little Seal. It is important to maintain connections between blocks of interior old growth forest and also between geographic areas (Ruggiero et al. 1994). To minimize additional impacts at lower elevations, DOI recommends that the Forest Service use alternatives to clearcutting in the following units: 1590A, 1590B, 1593B, 1620, 1650, 1660, 1670, 1810, 1811, 1820, 1830, 1850, 1852, 1853, 1973, 1976, 1977, 1980, 1981, 1992, and defer timber harvest during this entry in units 1520, 1521, 1522, 1540, 1550, 1552, 1720, 1730, 1731, 1750A, 1750B, 1770, and 1780.

Old growth in the Little Seal watershed is naturally fragmented by muskegs, alpine areas, rock, and other non-old-growth areas. This watershed provides connectivity between riparian habitat along the watershed and the small old growth habitat area located to the north. This is the only watershed segment in the project area that has not been entered by previous timber harvest and road building. The Preferred Alternative proposes to harvest timber and construct road #7605 in this watershed. The proposed road parallels approximately 1.5 miles of the Class I stream portion of Little Seal watershed (up to proposed harvest unit 1720). The proposed road construction and future timber harvest will significantly reduce the value of this important wildlife travel corridor. The potential for production and delivery of sediment into fish-bearing streams and lowered water quality may also increase. Consequently, DOI recommends deferring timber harvest within this watershed until (1) monitoring plans are developed, and (2) it is determined whether the area is needed as a control area for evaluating the effectiveness of project-wide old growth habitat areas.

Disproportionate harvest of alluvial spruce stands

Fragmentation also affects landscape diversity. The distribution of past harvest on landtype associations (LTAs) was examined. This is an important consideration for biodiversity since not all old growth is the same. Different types of disturbance and hydrologic processes produce different types of old growth forest. These processes are important to maintaining biodiversity across the landscape (Martin et al. 1995).

In 1956, most of the acres of old growth forest (defined as Volume Class 4 and above) occurred in colluvial/alluvial/coastal surfaces (USDA Forest Service 1997). The DEIS (Chapter 3, page 57) states that much of the harvest that has occurred in the project area focused on large alluvial fans composed of Sitka spruce. Our analysis, based on information provided in the DEIS, personal knowledge of area, and Figure 4-2 (USDA Forest Service 1997) indicates that harvest activity has not been equally spread out among the LTAs, but has concentrated on the colluvial/alluvial/coastal surfaces. The reason, we believe, is because they were easiest to access, on flatter terrain, and had a higher rate of disturbance and more spruce, compared to other LTAs. In the Southeast Chichagof Landscape Analysis Area, 44 percent of the old growth on the colluvial/alluvial/coastal surfaces has been harvested. At the project level, the proposed cutting is a disproportionate harvest in this LTA. This LTA has sustained the heaviest timber harvest over the last 40 years and contains valuable habitat for many wildlife species such as low-elevation key deer winter habitat. On a watershed basis, DOI recommends that future harvesting be distributed proportionately over the project area.

WINDTHROW

We concur that the integrated harvest prescriptions for wind management zones in units 1992, 1810, 1990B, 1803B, 1640, 1572, 1952 will meet TLMP guidelines for windthrow management. However, in units 1973, 1976, 1977, due to the highly dissected, steep slopes outside the stream buffers and high gradient contained channel types (predominantly H5, H6 channel types), windthrow is likely to occur despite the 50 percent harvest selection. Windthrow is more likely to occur if clear cutting harvest methods proposed in Alternatives B and D are implemented. The DEIS dismisses the possibility of significant windthrow by stating that "there are small trees present in the area." However, in unit 1973 where small trees are present, skunk cabbage is also present. This is characteristic of wetlands.

These small trees, if in a wetland or bog area, may not be adequate in preventing windthrow, because of typically poor drainage and weak, shallow root systems (Howes et. al. 1994).

Unit 1450 is classified as a moderate windthrow hazard area despite the evidence of both recent blowdown and slide activity documented in the unit card and the road card. Reid (1998) found that "76% of 160 slides that occurred between 1939 and 1983 were located on or immediately adjacent to older slide scars." Due to the proposed clear-cutting in this unit DOI recommends that the unit boundary be kept a minimum of 120 feet from the Class III channel on the west side of the unit. This will help protect wind firmness of the stream buffer.

We recommend reconsidering unit 1680 as a wind management zone, due to the documented windthrow hazard within the unit as well as being in close proximity to unit 1640. Unit 1640 is identified as having high windthrow potential.

LOG TRANSFER FACILITIES

Chapter 2, page 19 indicates that all action alternatives propose to reconstruct one former LTF at Crab Bay. One new LTF at mouth of Inbetween Creek (VCU 230) is proposed for the Preferred Alternative and Alternative D. Due to the concern with zone of deposit and potential for impacting productive intertidal and subtidal habitat, and herring spawn, DOI recommends that LTFs be designed and operated in a manner that allows for direct transfer of logs from land to barge. This will minimize the adverse impacts of bark discharge, accumulation, shading, crushing of egg deposits, and compaction of nearshore and subtidal habitats associated with log transfer, rafting, and storage. Tenakee Inlet is considered one of the fourteen major herring stock areas of Southeast Alaska and Yakutat and should be protected. DOI also recommends that specifications for docking facilities be included in the Final EIS.

BROWN BEAR HABITAT

Brown bear use extends from the beaches and estuaries to the subalpine and alpine summits and ridges of Little Seal, Inbetween Creek, South Crab, and Fog Creek. The low elevation drainage bottoms (below 1000 feet and classified as Class I anadromous fish streams in maps) provide important bear foraging areas. The late summer has been identified as the most critical or limiting period. During this season, bears concentrate along these important foraging areas. The Class I streams as shown on the maps, are the same areas identified for the most intense resource development activities (timber harvest and road construction/reconstruction) and are areas of high human use. These areas require 500-foot buffers as per revised TLMP standards and guidelines (page 4-114).

An analysis of unit cards for the Preferred Alternative reveals that some portion of the following harvest units are within the 500-foot buffer:

density of stream crossings could be detrimental to the resident cutthroat trout populations and other fish populations spawning or rearing in the Class I stream directly below (90 percent of the stream crossings cross Class II and Class III streams). There is a positive correlation between the number of culverts and stream crossings and the amount of fine sediments found in stream channels, and a negative correlation between fish densities and the number of culverts and stream crossings (Eglin and Hubert 1993). Any slope failures will result in a sediment overload within the stream, and have a cascading effect into downstream reaches. Downstream channels are classified as FP4 channels, primarily spawning and rearing habitat and extremely sensitive to excess sediment deposition. Due to the steep and unstable nature of the traversed slope (80 percent of the crossings are of HC5 and HC6 stream channels) the road construction design includes switchbacks to insure vehicular safety. This construction design results in most streams being not just crossed once, but twice, doubling the potential risk of stream damage. Regardless of the alternative, DOI recommends that a complete stream survey be conducted for those units and proposed monitoring and management plans for resident cutthroat trout within this harvest area be added to the Final EIS.

WETLANDS

The DEIS (Chapter 3, page 50-51) states that all action alternatives are expected to have direct impacts on wetlands due to road construction. Section 2 of Executive Order 11990 states:

A...each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action include all practicable measures to minimize harm to wetlands which may result from such use. In making this finding, the head of the agency may take into account economic, environmental, and other pertinent factors.

DOI recommends that the Forest Service seek alternatives to constructing roads through wetlands. The Forest Service is also encouraged to further investigate the feasibility of using aerial systems to transport logs from all sale units to transport barges.

DEER HABITAT

Sitka black-tailed deer receive the highest sport hunting and subsistence use of any terrestrial species in southeast Alaska. Residents from Angoon, Haines, Juneau, Petersburg, Sitka, and Tenakee Springs have identified Seal Bay, Sallery Bay, Crab Bay, and Kadashan Bay as important deer hunting areas. The quantity and quality of winter habitat is considered the most limiting factor for Sitka black-tailed deer (TLMP). Low elevation, high volume, old growth forest has the highest habitat value because it intercepts snow and provides understory forage plants. Lack of snow interception in the early successional stages and lack of forage in middle successional stages, reduces the value of these forest stages as habitat. Deer habitat capability has declined in VCUs 230, 231, 232, 233, and 234 by an average of 12 percent since 1956 (USDA Forest Service 1997b). These changes are due to timber harvest activities converting old growth habitat to second growth forest, and roads (USDA Forest Service 1997b). DOI recommends that harvest units be carefully planned to minimize the degradation of high-value wildlife habitat, old growth blocks, and migration corridors.

VCU	HARVEST UNIT
230	1590B
	1593B
	1620
	1720
	1730
	1731
	1750
	1750B
	1770
	1780
233	1980
234	1830

We also note that the 500-foot buffers are not shown or discussed on the applicable unit cards. DOI recommends that the unit cards acknowledge the requirement for the establishment of buffers. In addition, DOI recommends that bear buffers be identified and all applicable units adjusted to exclude timber harvest from these buffers.

ROAD MANAGEMENT

We are concerned with the overall lack of specificity in the mitigation that would be used to minimize the impacts of proposed new roads, allow passage of adult and juvenile fish, and correct washout problems on the current road system. Information presented in the main body of the DEIS and on the road cards (Appendix C) indicates that there are a high number of fish stream crossings on the existing and proposed road system. Unfortunately, due to the limited information presented, we are not able to determine with any degree of certainty how fish passage will be affected with implementation of the action alternatives (exceptions noted below). DOI recommends that the Final EIS address the issue of fish passage. We are interested in working with the Forest Service in resolution of this issue. You are encouraged to contact Sue Walker of the Juneau FWS fisheries staff at 907-586-7330 to discuss fish passage issues and other pertinent information.

We are concerned about the proposed road construction described in road card 75607, crossing units 1973, 1976, and 1977 for Alternatives B and D. DOI recommends harvest by helicopter as described in Alternative F. It is well documented that roads directly affect natural sediment and hydrologic regimes by altering stream flow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions in a watershed. For example, interruption of hillslope drainage patterns alters the timing and magnitude of peak flows and changes base stream discharge (Harr et al. 1979, Furniss et al. 1991) and subsurface flows (Furniss et al. 1991). Road-related mass soil movements can continue for decades after the roads have been built (Furniss et al. 1991). The total proposed road length in these units is 1.41 miles with 15 stream crossings, a highly concentrated stream crossing density. This

BALD EAGLES

1-7
DOI believes the proposed development should follow the conservation measures contained in the 1990 Bald Eagle Conservation Interagency Agreement between the Forest Service and the FWS. We further believe that all shoreline areas affected by road construction, timber harvest, camps, and LTF sites should be surveyed to determine the location and status of eagle nests.

FISHERIES

11-7
DOI recommends that the Final EIS include a detailed, long-term, road management plan addressing the potential for erosion and details of long-term maintenance following project completion, for each alternative. Road cards should include Best Management Practices (BMPs). In addition, stream crossing structures, specific to channel type, should be included in the BMPs. Our concern is that permanent road crossings need to be constructed and maintained to adequately allow both juvenile and adult fish passage. Construction of roads through terrain identified as having a high potential for excessive sediment delivery to fish habitat should be avoided where other alternatives reasonably exist.

6-2
Because of the high density of channels in VCU 233, we believe that clearcut harvest, road construction, and associated stream crossings are likely to cause hillslope failure and result in excessive sedimentation of downstream fish habitat. The mainstem channel of South Crab Creek could become overloaded with sediment. Sedimentation load destabilizes and degrades fish spawning and rearing habitat. DOI recommends that the Final EIS include a detailed monitoring plan to follow the post-harvest integrity of hillslopes, roads, stream crossing structures and downstream fish habitat that may be adversely affected by the failure of applicable standards and guides to protect fish habitat and water quality.

6-3
To determine the potential effects of the proposed project on anadromous and resident fish stocks, DOI recommends that the Final EIS include a complete inventory of all fish stocks known to inhabit the project area. Information on fish stocks should include monitoring in the project area and adjacent lands where fish stocks are likely to be affected by proposed timber harvest and road construction activities.

UNIT CARDS

11-10
Portions of the unit card information appear to be incomplete. While the map detail and scale are adequate, none of the unit cards show any locations of landings. The narrative for the unit cards is not linked well between resources in a number of cases. For example, of 36 units in the Preferred Alternative unit pool, 26 have no wildlife field review, 9 have no timber field review, and 36 have no transportation field review. While there are some cross-references between resource narratives, vegetation and stream course protection are best discussed. The unit cards presented in Appendix B should identify the specific mitigation measures to be applied during layout of the project. We believe that the direction in the cards should be clear and specific. DOI recommends that specific information such as landing locations be shown on unit cards as applicable to facilitate resource reviews.

Techniques used may include minimizing road construction by increasing the use of helicopter yarding, and utilization of innovative timber harvest prescriptions to reduce opening sizes and maintain forest structure across the landscape as well as within the stand.

We are concerned that adjustments to the habitat capability model for the purpose of accounting for individual tree selection harvest (removal of 25 percent of the basal area) may not accurately reflect the actual habitat value of an area for Sitka black-tailed deer. The DEIS states "we adjusted the inputs of the model to credit low-impact harvest prescriptions such as individual tree selection, in which only 25 percent of the basal area is removed." We understand the dilemma of assessing the habitat suitability value of units containing retention trees, and that using a clearcut habitat suitability score may not reflect the full value of these units as deer habitat. A retrospective analysis of harvested areas within Southeast Alaska (Kirchoff and Thomson 1998), suggests that structure retained within a clearcut does little or nothing to enhance the immediate value of the area for deer. DOI recommends that the deer habitat suitability index values for proposed retention units be the same as clearcut units, unless harvested openings are less than 0.2 hectares, as recommended by Kirchoff and Thomson (1998).

MARTEN HABITAT

1-9
The DEIS (Chapter 2, page 4) states that the project area is located in a high-risk biogeographic province for American marten (USDA Forest Service 1997c, pp. 3-13 to 3-17). Habitat capability for marten has been reduced in 5 of the 6 VCUs in the project area (USDA Forest Service 1997b, Table 4-15). The reduction is due to timber harvest and road construction. DOI recommends that road effects be minimized by administrative regulations, such as closing the road system to motorized vehicles. DOI also recommends retention of trees, snags, and logs greater than 80 centimeters in diameter. These features should be retained in clumps distributed throughout the harvest units. The size and arrangement of retained forest patches within the harvest units should reflect a balance between relatively large size trees for wind-firmness and smaller sized trees, which would increase the number of retained patches (Schumacher 1999). Wilbert (1992) and Ruggiero et al. (1998) found that martens selected denning and resting habitat in plots about 30 meters in diameter. Therefore, we further recommend that retained forest patches be a minimum of that size. However, larger patches would be more wind-firm and have greater potential as marten habitat over time.

QUEEN CHARLOTTE GOSHAWK

The DEIS states that no confirmed goshawk nests have been found in the project area. However, goshawks have been observed in VCU 230. FWS recommends continuing annual goshawk surveys in all units included in the proposed or selected alternative, until harvest in those units is imminent. Units where goshawk nesting is confirmed should be dropped, deferred, or modified to meet the appropriate TLMP standards and guidelines.

FWS recommends against publication and public distribution of maps showing known goshawk nest sites with the Final EIS. Depictions of circular nest buffers on such maps could potentially result in nest vandalism.

MISCELLANEOUS

DOI recommends that the Final EIS include maps of the project area that identify previously harvested areas, including dates of harvest, present condition, and any potential or needed restoration (placement of land back into a natural condition or state of productivity). 1-2

DOI recommends that the Final EIS include a detailed discussion of restoration potential both in the project area and adjacent lands. As an example, the Fog Creek watershed has incurred the most extensive timber harvest and may be a candidate for second growth thinning, conifer release, or conifer planting in the riparian zone. 7-1

SPECIFIC COMMENTS

Chapter 2, page 11. We recommend that the reasons for closing roads and leaving others open should also be stated for the Preferred Alternative in the Final EIS. For example, the reason for closing roads in Alternative D is to reduce hunter access that may impact the brown bear. 11-10

Chapter 3, page 7, third paragraph. We recommend that the last sentence of this paragraph be changed in the Final EIS to read "Large dead or defective trees provide nesting *and* resting habitat for martens. ..."

Chapter 3, page 11, second and third paragraph. Maps with the sale offerings referenced in these paragraphs should be included in the Final EIS to better analyze cumulative impacts on resources and biodiversity. 11-1

Chapter 3, page 17, Figure Wildlife-2. We recommend that this figure be modified in the Final EIS to provide an adequate representation of past, present, and future effects of harvest on the project areas existing high-value deer winter habitat and biodiversity. 1-9

Chapter 3, page 29, first paragraph, last sentence. Aerial surveys and personal observations indicate that trumpeter swans are present in the project area during spring and fall migration. We recommend deleting "may be" and replacing with "are present." Therefore, in the Final EIS, the sentence would read: "Trumpeter swans *are present* in the project area..." 2-1

Chapter 3, page 31, Harlequin Duck. Harlequin ducks nest adjacent to inland streams and rivers, commonly using near-shore coastal waters throughout the year. The effect of the proposed actions on harlequin ducks depends on the nature and time of site specific activities. We recommend that the Final EIS include an analysis of impacts the project may have on this species. 1-7

Chapter 3, page 37, Landslides. We recommend that the Final EIS include a map of existing landslide disturbances. We further recommend that this section of Chapter 3 include a discussion in the Final EIS of areas with evidence of past landslide activities in the project area. 6-2

Chapter 3, page 38, fourth paragraph. The interpretation of the watershed risk index (WRI) is inconsistent and requires clarification. A WRI provides a general relative measure of potential management-induced sediment production and transport. This paragraph states that "All watersheds in the project area have low to moderate WRI." Yet page 40, paragraph 4 of the DEIS states that "As shown in Table Water-1, the Crab watershed has a relatively high watershed risk index (7.9)." It appears that the Crab watershed WRI of 7.9 is relatively high considering (1) 10 is the maximum value on the WRI scale, (2) the number of units proposed for harvest and, (3) the extent of past harvest within the watershed. This discrepancy should be corrected in the Final EIS by modifying the statement on page 38 to indicate that while most watersheds in the project area have a low to moderate WRI, the Crab watershed has a relatively high WRI.

Chapter 3, page 47, Table Water-6. We recommend that this table be revised in the Final EIS to include data on the total number of stream crossings, types of structures, and number of sensitive crossings. We also recommend that a detailed discussion of planned maintenance be included in the text. 11-10

Chapter 3, page 51, Table Wetland-3. Total road mileage for Alternative F needs clarification. Under this alternative, the total miles of road (total road miles) exceeds the sum of the newly constructed roads (4.3 miles) and the reconstruction of existing roads (13.4 miles) stated on Chapter 2, page 12, table 2-3, and Chapter 3, page 47, paragraph 3. We recommend the table be amended in the Final EIS to include the total number of road miles for each alternative and the total miles of these roads occurring within wetlands.

Glossary, page 14, Single (individual) tree selection. It is unclear what individual tree selection means. This harvest method can be interpreted as a percent of the number of trees in the unit or basal area. The unit summary tables and unit cards for Alternatives D and F identify units for individual tree selection harvest. Selection harvests range from 25 percent to 70 percent. A selection harvest of 25 percent may be too high when using number of trees in the unit as criteria for the removal of selected trees. It is also unclear what percentage of acres is proposed for management under an uneven-aged silvicultural system in the Preferred Alternative. We recommend that these issues be clarified in the Final EIS. 9-1

Appendix A: The title page needs to be corrected in the Final EIS by deleting "Indian River" and replacing with "Finger Mountain." The title should read: "Reasons for Scheduling the Environmental Analysis of the Finger Mountain Project Area" 8-2

Appendix C: Road cards (7562, 75651, 7565, 7567, 75682, and 7566) state "additional detailed notes on stream crossing sites...are available in Fish/Hydro field notes for that unit," but the DEIS unit cards do not contain a Fish/Hydro section. We recommend that the Final EIS include a Fish/Hydro section with stream crossing information included in the unit cards. 11-10

CONCLUSION

Based on our jurisdictional responsibilities, DOI believes the preferred alternative would have the most negative impact on biodiversity and old growth. Therefore, we recommend that an alternative less intrusive to fish and wildlife habitat, such as Alternative F, be selected for the Record of Decision.

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To better maintain connectivity and dispersal habitat, we recommend that partial harvest methods be employed in all units. Because of potential impacts to wetlands and waterways, and management concerns associated with human use of roads, we recommend the use of helicopter logging where additional road building would be required. We also recommend avoiding construction of a new LTF. If the decision is made to construct a barge loading facility, we recommend removing the rock ramp and bulkhead after completion of the project.

We appreciate the opportunity to comment on this DEIS. Please contact Mr. Richard Enriquez, the lead FWS biologist for this project, at 907-586-7021, if you have any questions about these comments and when opportunities arise to participate in project-related meetings or field work.

Sincerely,



Pamela Bergmann
Regional Environmental Officer - Alaska

RICHARD J. CLURBEN
LAWSON
COMMITTEE ON CORPORATIONS
COMMITTEE ON
GOVERNMENTAL AFFAIRS
COMMITTEE ON THE BUDGET
SELECT COMMITTEE ON ETHICS
ASSISTANT DEMOCRATIC
FLOOR LEADER

United States Senate
Washington, DC 20510-1394

364 RUSSELL SENATE OFFICE BUILDING
WASHINGTON, DC 20510-1394
TELEPHONE (202) 224-1100
FAX (202) 224-1100
TTY (202) 224-1100
225 SOUTH EIGHTH STREET
SUITE 200
ANN ARBOR, MI 48106-2879 FL
(313) 751-6000
(313) 751-6091
135 SOUTH EIGHTH STREET
SUITE 200
ANN ARBOR, MI 48106-2879
12711 1ST AVE. 482
181 NORTH COURSE STREET
ANN ARBOR, MI 48106-2817

April 14, 2000

To: Rick Abt
please file in Finger mt.
Felder

James Franzel, District Ranger
Forest Service
204 Signika Way
Sitka, AK 99835

Dear Mr. Franzel:

It has come to my attention that the Forest Service has published a Draft Environmental Impact Statement (DEIS) for the "Finger Mountain" timber sale. The DEIS outlines two alternative plans, "A" and "B", for logging in the forest.

It is my understanding that the Forest Service's preferred alternative "B" proposal would adversely affect Tenakee Inlet at Crab Bay by allowing the cutting of 21 million board feet of timber and the building of 21 miles of new road. This development would cause harm to an area that is rich in wildlife and is used regularly by residents and visitors for sport and subsistence hunting as well as fishing. Furthermore, Tenakee Inlet remains part of Tongass National Forest. Proposals to clear-cut any areas of Tongass go against the spirit of the 1990 Tongass Timber Reform Act which mandated an end to "timber-at-any-cost" management of the Forest.

I am aware that alternative "A", which proposes no action, may not be feasible because building roads is necessary to facilitate timber transport and that timber sales are important to the local economy.

As a member of the U.S. Senate, I have supported the protection of Alaska's natural resources. I had the chance to visit Alaska last year and witness its unmistakable beauty first hand. I do not believe any proposal should come at the expense of one of Alaska's great treasures. I hope that the Forest Service can come up with a more moderate plan than those prescribed in the DEIS.

Thank you for your consideration of this matter. I look forward to your response.

Sincerely,

Phil Dineen

5-1

Feb 18, 2000

Jim Franzel, District Ranger
Attn: Finger Mtn. EIS
USDA Forest Service
204 Signika Way
Sitka, AK. 99835

Sir,

If the folks in Tenakee don't want you to cut the trees out in the inlet then don't do it. Go cut out the trees somewhere where they want you to; it there is anywhere, perhaps Thorne Bay?

Sincerely,

Scott Visser
HHS, AK. 99827
E.C., AK. 99825

8-2

Al Wilson
P.O. Box 597
Sitka, AK 99835
February 28, 2000

Jim Franzel, District Ranger
Attn.: Finger Mountain EIS
USDA Forest Service
204 Signakka Way
Sitka, AK 99835

Re: Finger Mountain Timber Sale

Dear Mr. Franzel:

The draft EIS for the above referenced timber sale said there would be no significant possibility of a considerable restriction on subsistence resources. I understand that for this reason the Forest Service determined not to require subsistence hearings. The proposed sale area is in critical habitat for deer. Logging roads already fragment much of the Tenakee area's wildlife habitat. More clearcuts and logging roads will move deer and other wildlife out of the impacted areas for many years. This will have the effect of moving deer far enough away that they will no longer be reasonably accessible for harvest by subsistence hunters. Additionally, this appears to be a continuation of a piecemeal approach to wildlife management that if allowed to continue to its logical conclusion could wipe out the entire critical habitat for deer and other animals. Accordingly, I request that the Forest Service rescind their decision not to require subsistence hearings and hold them in Tenakee Springs and Sitka as early as convenient.

Moreover, herring, herring spawn, and crab are important subsistence foods, as are scallops, unique to this area, that the Forest Service did not mention in the draft EIS. Herring is particularly important to sustaining salmon that spawn in nearby streams or rivers. Salmon from streams are an important subsistence food for the Alaska Native as the oil content of the fish drops after entering streams and only at that time does it become suitable for drying. Herring spawn is rapidly becoming a rare commodity for subsistence users as the commercial herring sac roe fisheries take remains at unrealistically high levels over objections from Alaska Natives. Whenever we approach the State to express concerns we have about subsistence fishing rights, our concerns seemingly fall on deaf ears. The State of Alaska abdicated control over subsistence fisheries October 1, 1999. This being the case, I believe the Federal Subsistence Board is the appropriate body to review the draft EIS. They would make whatever determinations necessary as to the adequacy of the measures to be taken to protect subsistence fisheries put forward in the draft EIS. Presumably, they would do this after receiving input from local subsistence resource users.

6-1 Many Sitkans have urged the Forest Service to protect roadless areas in the Tongass National Forest. Roads cause erosion and are detrimental to salmon streams. As I stated earlier, many of these streams here are important to subsistence users. We must protect the roadless areas within the proposed timber sale area while the national policy on roadless areas is being decided this year. I understand there are 21 miles of new logging road planned for construction. There are hundreds of miles of logging roads on Chichigof Island now. There are sufficient roaded areas in the Tongass to sustain logging for decades even if this area remains roadless.

Please include the above comments in your review of the Finger Mountain draft EIS.

Sincerely,



Al Wilson

Sunday Feb, 27 2000

Caleb Wardlaw
P.O. Box 1524
Sitka, AK 99835

And:
Thomas Hollow's Blue Heron Farm
Rt. 1 Box 1090
Exeter, MO 65647

Dr. Mr. Jim Franzel,

I am writing on behalf of myself and the people of Thomas Hollow's Blue Heron Farm. I have been a resident of Southeast Alaska for five years, five of the farm's members have also resided in Southeast Alaska and others have and do frequently visit. I have visited Tenakee Springs only a few times, but consider it a special place to me. One farm member has often visited Tenakee Springs and dearly loves it.


We oppose this timber sale as we do any timber sale that relies on clearcut harvesting or favors large industry. Neither clearcut harvesting techniques nor sales benefiting large corporations are consistent with "multiple use", for which our National Forests are intended. The effects of clearcut harvesting render impotent the ability of any such harvested area to contribute towards other resource uses. Timber sales that benefit large corporations result in the vastly disproportionate allocations of public resources to select few.

We believe that this EIS is inadequate. Broadly, it fails to adequately address biological diversity, social values, subsistence, economics, and silviculture methods and effects. Examples of inadequacies include the following: No mention was made of effects to insects, spiders or other terrestrial invertebrates. There is only a marginal discussion of the possibility of rare plants and no mention of the possibility of any rare fungus or lichens. No mention was made of the spiritual importance of old growth. Marginal and inadequate analyses were done in considering effects to recreation. Consequences to subsistence were essentially written off as rough luck. Discussion of the specific economic implications of each alternative is non-existent. For example, I alone know of two people including myself who are looking to buy land in the Southeast and consider Tenakee Springs an option, but are repelled by areas burdened with clearcuts. In this EIS no type of discussion is given to such economics. The methodology by which the harvest techniques for each unit were chosen is nonexistent. Also, the EIS fails to consider recent developments in the management of roadless areas. As the proposed sale enters inventoried roadless, a discussion of the implications and consequences of that action is necessary. Also, there is not an adequate range of alternatives. The range of alternatives has a void in the volume of harvest between 10.9 mmmbf and 0 mmmbf. Also, there is no alternative that resembles the CCC alternative because, no alternative was offered that individually met all the CCC concerns for which the CCC alternative was inspired by. The CCC alternative would simultaneously offer "opportunities for the long-term promulgation of very small timber sales from this sale area", eliminate new road construction, emphasize alternative logging practices, and preclude the construction of a new LTF.

Furthermore, because the EIS refers to so many documents and analyses that are not easy for the public to access it is near impossible to fully study the EIS. We request that two copies of any reference found within the EIS be placed in the local library, one set of copies in the reference section and one set that can be checked out. And, that it be stated in the EIS that it has been done. Please do this for the FEIS if there is one. This would greatly improve the extent to which the public could meaningfully participate in the management of our forests.

We would like to conclude by stating that we strongly support Alternative A as the preferred alternative. If the process of this sale continues and an FEIS is written, please address each of the above concerns individually.

Sincerely,
Thomas Hollow's Blue Heron Farm


Caleb Wardlaw

Charles E. Wilber
705 Etollin
Sitka, Alaska
99835

Jim Franzel, District Ranger
Attn: Finger Mtn EIS
USDA Forest Service
204 Siginaka Way
Sitka, Ak 99835

Dear Ranger Franzel,

Please! No more clearcutting or road building in Tenakee Inlet. The citizens and ecosystem in this area deserve no more clearcutting. This area has already suffered enough from past logging. No new roads should be added until the national roadless policy has been decided.

Thankyou for considering my request for no more logging in the Tenakee area.

Yours truly,

Charles E. Wilber

CARL H. WILLIAMS
443 SALMON KILL ROAD
LAKEVILLE, CT 06039
(860) 435-9407
14 February 2000

Mr. James Frazel, District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Frazel:

I am writing to oppose the Tenakee Inlet timber sale, especially the Finger Mountain Region, of the Tongass National Forest. As currently planned, the proposed clear-cut plan "B" of the U. S. Forest Service would severely damage a pristine area of Chicago of Island. Tenakee Inlet has already suffered too much at the heavy hand of the U. S. Forest Service. It is time for that arm of the Federal government to wake up to the fact that sport and commercial fishing, hunting, and tourism are more important to the economy of Alaska than the sale of virgin timber for hot tubs in Japan and other frivolous uses. Almost all the residents of this tiny town of Tenakee are opposed to more clearcuts in their area. I have never been there, but I agree with them. After all, it is a National Forest, not a forest for the benefit of assorted timber companies. I hope you will support Plan "A" which would mean NO ACTION on these sales.

Sincerely yours,



Carl H. Williams

CC: Senator Christopher Dodd
Senator Joseph Lieberman
Representative Nancy Johnson

Dear Mr. Franzel,

I am writing to comment on the proposed Finger Mountain timber sale. I am a registered voter of Tenakee Springs and have been since 1996. I have spoken with you during the last few years at public meetings in Tenakee regarding the proposed Indian River sale as well as Finger Mountain.

I am opposed to the Finger Mountain timber sale and the preferred alternative "B". There is inadequate purpose or need for the proposed project. The effects of logging, logging camps, log dumps, and associated marine and helicopter traffic on sport and subsistence activities in Tenakee Inlet would be detrimental to residents and people throughout southeast Alaska who use Tenakee Inlet. The combined effects of this sale and four other possible USFS sales in a 20 mile radius (Indian River, False Island, Eight Fathom, and Saook) would displace guide businesses and result in increased pressure on unaffected areas. Tenakee Inlet is still suffering from the long term, cumulative effects of past and present clearcutting. The proposed Finger Mountain timber sale would cause the destruction of wildlife habitat and damage fish streams. Tenakee Inlet already has too many clearcuts for one area, especially one which is occupied by residents and used by so many residents of southeast Alaska.

I ask that you not build roads and clearcut old-growth in roadless areas of Tenakee Inlet, especially Little Seal Bay. I ask that you fully protect important subsistence and sport use of deer in the area. Please take a hard look at the long-term impacts from this sale, past sales, and other proposed timber sales planned in Tenakee Inlet, including the Indian River sale. Please work to design the timber sale to respond to the economic needs of Tenakee Springs by choosing the CCC (Chitkaof Conservation Council) alternative. Please protect the dumping of logs in the water and require that all logs be placed on barges.

Thank you.

Sincerely,
Chris Whitehouse
Box 542, Tenakee Springs, AK 99824

Deena Wisenbaugh
PO Box 642
Tenakee, AK 99841

Jim Franzel
attn: Finger Mt. EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

1/27/00

Dear Mr. Franzel:

I am a student at Tenakee Springs High School. I have lived here my entire life and would like to share my feelings with you on the Finger Mountain timber harvest plan. I went to the meeting on the 24th. I have to say that the Forest Service's preferred alternative, though it was interesting, wasn't what Tenakee would like. I'm sure it's already known that 100% of the Tenakee community (whoever has spoken up) would like to see Alternative A in action, which would be no action at all. What I am wondering is why Alternative A was even put out as an option, if it wasn't ever going to be picked?

When I wake up in the morning and look out across the inlet and the mountains, I think of how beautiful it is. I walk down my hall, look out my windows and am taken by how peaceful and serene it all is. I don't remember the years that there was logging around here, but everyday I am reminded of what I don't remember, by seeing the scars across our inlet. I am not against logging, but I don't condone what I see as the pointless molestation of our National Forest. I understand that Alternative B would be the most pleasing to the eye, at least from Tenakee, but just because it wouldn't be as obvious, doesn't make it better. If a person loses the capability to speak, you may not see a scar, but like it or not, it's there. The point I'm trying to make is: though the damage may not be directly visible, that's not to say that it would be any less.

My family and other people crab fish in the inlet. We have made the majority of our income from crabbing over the years. Crab Bay has been important to us, as has been Inbetween. Not only am I thinking as a person concerned about the environment, but also as a person who likes to eat during the winter. Does that seem greedy? I don't think it does. I understand that the wood/timber must come from somewhere, and if were 20 trees a year from

random places in the the Tongass, I don't think you would have nearly the same level of resistance. I also recognize the need for jobs; so, what if you were to open jobs that put people in carpentry or fine custom craftsmanship of timber; perhaps making cabinets, chests, chairs, or even musical instruments? It would create jobs that would use less wood per year and would take longer, with possibly better wages.

Although it may seem like a small price to pay for living in such a wonderful, peaceful, and beautiful place, two or three years of logging would destroy the serenity and silence of our environment, at least for a while. Please reconsider Alternative A; please think of our community.

Sincerely,
Deena Wisenbaugh

Ps. I would like this entered as a comment on the draft EIS for Finger Mountain, please. Thanks.

ERIC A. WESTIN
Senior Vice President
Development & Strategic Alliance Group

GAYLORD ENTERTAINMENT

February 22, 2000

Mr. James Franzel
District Ranger
Attn: Finger Mountain EIS
204 Siginaka Way
Sitka, AK 99835

Dear Mr. Franzel:

Having been to the incredibly beautiful area around Tenakee Inlet, I would like to express my grave concern regarding the Forest Service's plan to clear-cut timber in this area. As you can see from the enclosed copy of photos, we have enjoyed this area and its beautiful scenery in the past and have plans to return in the future.

Any clear cutting of forest and the associated haul road construction will not only pose a threat to the ecosystem in this area but undoubtedly will negatively affect the scenic beauty of the region. The views in the Tenakee Inlet area are incomparable and are a big part of the reason those of us from the "lower 48" states look forward each year to trek to this area. You are truly blessed with such raw beauty. I beg you to preserve this asset. Please reconsider your plan to harvest timber in this area.

Thank you for your consideration in this matter. I, and thousands of other sportsmen, appreciate it more than you will ever know.

Sincerely,



Eric Westin

EAW/dkb

Enclosure

2804 OPRLAND DRIVE
NASHVILLE, TENNESSEE 37214
TELEPHONE 615-871-6130
FACSIMILE 615-871-6200

14819 SW Hillside Hwy
Hillsboro, OR 97123

James Franzel, District Ranger
204 Siginaka Way
Sitka, AK 99835

ATTN: Finger Mountain EIS

Please do not proceed with your plans to clear-cut old-growth timber in the Tongass National Forest. As the name implies this forest belongs to all of us. And the irony is that all of us (tax-payers) will pay for the 346 miles of roadways as other corporations can make of us cents profit!

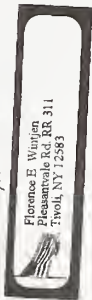
Logging in the Tongass National Forest as well as the other 16 timber sales (Auklen River, Eight-Tallon Bigot, False Island, Good Bay, all within 20 miles of Tenakee Inlet) would have a chilling effect on wildlife and adverse effect of the pristine quality for residents and tourists. Alaska has capitalized on the environment and beautifully so.

Please include the Tongass National Forest in your proposed Roadless Area Policy.

Respectfully,

Eric A. Westin

Feb 10, 2000



James Frangel, District Ranger
 Bitter Finger Mountain EIS
 204 Sigvinska Way
 Sitka, AK 99833

Dear Mr. Frangel-

You, I live a long way from Alaska, however am very concerned when a small community does not have choice to stop the outside world from coming by and taking whatever they want of the natural resources. I'm talking about the community of Nenakee Springs, Alaska and the fact that the U.S. Forest Service wants to do a large clear cut timber sale in the immediate vicinity of Nenakee Springs in the Tongass National Forest.

do you call it "Finger Mountain" timber sale. Now isn't that a deceivng name ??? How misleading since all the proposed logging would occur in Nenakee Inlet at Crab Bay, In-between Creek and the drainage immediately West of In-between Creek in the vicinity of Little Seal Bay.

Just imagine the impact of these noisy activities on the wildlife - on their habitat. Come on - leave their pristine area alone - let these few people live in peace. Leave a part of the world intact and beautiful. Please

- listen to your own Forest Service scientists and other scientific studies that clear cutting is harmful to wildlife -
 Enough is enough!! I'm in favor of alternative "A" - No Action.
 I should think this would also affect fishing in that area -
 Most sincerely,
 Florence E. Wintjen

My husband
 is also in agreement
 to no timber sale -
 he also is signing
 this letter -

Dave To

Signe Wilson
P.O. Box 597
Sitka, Alaska 99835
February 28, 2000

Jim Franzel, District Ranger
Attn: Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, Alaska 99835

Re: Finger Mountain Timber Sale

Dear Mr. Franzel:

Please consider the following comments when making the final determination on the above-mentioned timber sale.

It is common knowledge that the residents of Tenakee Springs oppose more clearcut logging and roads in their area. Their voices deserve the utmost consideration when proposing timber harvest in their front yard. They depend to a great extent on the subsistence fishing, hunting and gathering in Tenakee Inlet. Clearcut logging and road building have severely impacted the people of Tenakee Spring and other users. The people of Tenakee Springs deserve your attention.

My family visits Tenakee Inlet by boat, previously as commercial troll fishermen and now for pleasure. We cannot imagine the placing of a barge landing facility or rafting area in Crab Bay. This is a beautiful bay and used heavily by residents and visitors for hunting, gathering and recreation.

In the fall, humpback whale feed in Tenakee Inlet in large numbers and there are numerous seal haulout sites throughout the Inlet. Considering the extensive harbor seal population and their haulout sites in Crab Bay, I do not believe it possible for the logging activities to take place without disturbing these marine mammals. Federal law mandates these pinnipeds not be disturbed. I assume the U.S. National Marine Fisheries Service reviewed your draft EIS for potential violation of the Marine Mammal Protection Act. I am not certain they are aware of the extensive numbers that make up the harbor seal population here. The additional boat traffic, log tows and other activity that is a result of this type of industry must not disturb these mammals.

The Forest Service should cancel this timber sale since this was originally part of the Alaska Lumber and Pulp contract. There is no longer a need for this timber since there is no mill. It certainly would be of no benefit to residents of Baranof or Chigof Islands.

Thank you for the opportunity to comment.

Sincerely,

Signe Wilson

Signe Wilson

Wendy
P.O. Box 6258
Sitka, AK 99835
Feb. 28, 2000

cc. Jim Franzel, D.R.

Dear Mr. Franzel,

We as a family, and residents of SE Alaska would like to voice our opposition to more logging in Tenakee Inlet. No more old growth forests should be cut and no new roads built. This habitat is critical & there are so few truly untouched places left in SE. We have crushed it & know. Please do not allow any more logging & roads in the roadless areas of the Tongass. It is very difficult to find many quiet places, free from machine noise. The roadless areas in the Tongass deserve protection. The Finger Mountain area is also critical habitat for deer & bears & some bird species. Please listen to our concerns.

Thank You.

Pam Ugentzel, MEd, M.A., CCC-SLP

Forrest J. J. J.

John H. W. O.S. Environmental Studies

Robert N. Yarborough
20 Hacienda Drive
Napa CA 94558-1610

James Franzel, district Ranger
Attn: Finger Mountain EIS
204 Sitka, AK 99835

Tenakee Historical Collection

Post Office Box 633 Tenakee Springs, AK 99841

February 22, 2000
Jim Franzel, District Ranger
204 Siginaka Way
Sitka, Alaska 99835

Dear Ranger Franzel,

Today is my birthday. I am fifty one years old and have lived in Tenakee Springs for 18 years. My kitchen and dining room windows look directly across Tenakee Inlet into the mouth of Crab Bay. I take great interest in the weather, water, and view from these windows each day. Obviously, none of us can change our age, the tide or the weather, but with the proposed Finger Mountain Timber Sale the view could dramatically change. Please consider my following comments, requests, and questions on the Finger Mountain Timber Sale(s).

First, I have never been convinced that this is an appropriate name for the sale, *Crab Bay Sale(s)*, *Tenakee Inlet Southshore Sale(s)*, *Crab/Saltier Bay Sale(s)* are all titles that are easily recognizable as Tongass lands in Tenakee Inlet by most southeast Alaskans. *The Finger Mountain Timber Sale(s)* is a name that carries with it an unsavory connotation as well as a location that isn't commonly known. The Dictionary of Alaska Place Names describes Finger Mountain's location as 3 miles NE of Hoonah Sound on Chichagof Island. It notes that it is a mere 2700 feet and is a descriptive name given in 1895 by Commander E.K. Moore (Moore Mountains). I'm afraid the *finger* seen from Tenakee is figurative. What we will actually be faced with are visible clear cuts, loss of fish and game habitat, and significant increase of noise and activity in front of our homes and town.

Second, I am quite concerned about a group of petroglyphs that are located very near an existing road that will be reconstructed and used in all Alternatives but Alternative A. It is noted in the DEIS that "specific monitoring" will be required throughout duration of use of *ITF at Crab Bay*. I assume this ensures that there is no damage to this important prehistoric site (VCU 233, 49 SIT 094) because of its proximity to renewed road construction and logging traffic activity. I do not know what the scope of this monitoring is. I have visited this site, photographed and measured it. I am very interested in preserving this little known and most intriguing group of very distinct petroglyphs. As Coordinator of the Tenakee Historical Collection and an interested party I would like to take part in this monitoring. At the least I am asking to be apprised of the method and frequency of monitoring this site.

The third issue I wish to comment on is the statement declaring Tenakee Springs is *not* considered a low income community (Chapter 3, Environments and Effects, page 106, last paragraph). Title I, a federal program for school money (includes lunch program, etc.) is determined by income and family size. Our most recent determination for that program was based on a 100% response from Tenakee families. Our school qualified in excess of 75% for Title I funding. A casual glance at the demographics of Tenakee will show a high proportion of retired and disabled residents. In the DEIS under *References Cited*, I don't see a resource that would have determined Tenakee Springs to be more than low income. How was that conclusion made?

Thanks for your time and consideration.

Sincerely,

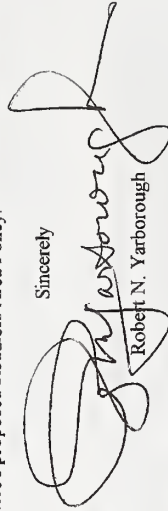
Vicki

Vicki Wisenbaugh

Dear Sir,

I fish Alaska every year and it has been my deep regret to see the deterioration of this wonderful resource. Sport Fishermen, Hunters and Tourists are a great source of revenue to the state of Alaska and it is a shame that you and your department should even consider any clear cutting of the Tongass National forest. These clear cuts would effect the beauty, the health and the pristine quality of the Environment forever and would probably have to be subsidized by our tax dollars forever because of this terrible blunder. Logging, Camps, the LITs and all of the associated marine and Helicopter traffic, in the Tenakee Inlet at Crab Bay and Little Seal Bay area would be a disaster. All this activity can't help but cause an adverse effect. Noise Visual impacts and habitat destruction have most residents of Tenakee in favor of Alternative "A" in the Forest Service's Plan, NO ACTION. We Fishermen and Tourists strongly support the inclusion of the Tongass National Forest in the Forest Service's proposed Roadless Area Policy.

Sincerely



Robert N. Yarborough

Copies to: Senator Dianne Feinstein
Senator Barbara Boxer
Representative Mike Thompson

17 FEB. 2000

It has recently been brought to my attention that the people of Tenakee Springs, Alaska are currently dealing with the issue of Finger Mountain EIS. Their issues and arguments are clear and relevant as far as their concerns for their environment. The impact of what is being proposed by the Forest Service would definitely affect the 96 people who choose to live there. And clearly care as to the state of the environment as a whole.

From my experience as a Montana for 25 yrs, I have seen the impact of logging in this area over the years. There has been clear-cutting, helicopter and other logging. The state is now paying extreme amounts of money to "FDX" what has been done in the past.

Because of the lack of forestation and the disruption this caused, we have for a fact, ~~been~~ lost a great percentage of wildlife in our area.

Please accept this as a statement against the proposals being set forth to the people of Tenakee Springs, Alaska.

Wayne & Gale York
Box 402
St. Ignace, Montana 59865
406-745-4807
E-mail
wayne@stignatius.net

Dianne Zemanek
P.O. Box 591
Tenakee Springs, AK 99841
907-736-2489

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signaka Way
Sitka, AK 99835
Fax: 907-747-4331

Dear Jim Franzel and the Forest Service:

I am writing you concerning your Draft Environmental Impact Statement for the proposed "Finger Mountain" timber sale. Alternative "B" is not an acceptable alternative for several reasons.

1. Clear cutting is harmful to the aquatic life as well as the wild life. 6-1
2. The impact on wildlife and fisheries effects human income life in small communities such as Tenakee Springs. Examples: A- Fishing and hunting are decreased! Which in turn effects the subsistent life style of - small communities. B- Commercial fishing in the area can be devastated such as crabbing and salmon fishing. No income for the fishermen. C- The decrease of the beauty and the natural surroundings impacts tourism. This is part of the lively hood of Tenakee Springs locals. D- The quality of life is diminished when all these factors play a negative role in the life of an individual. 2-1 3-3
3. The impact of this and four other log sales within 20 miles of Tenakee, will devastate a small community! 11-1

Please reconsider your alternative and select alternative "A" NO ACTION!!!

Sincerely,

Dianne Zemanek
Dianne Zemanek

TO: Lisa Winn, Team Leader

ATTN:

Finger Mountain EIS
USDA Forest Service
204 Siginaka Way
Sitka, AK 99835

28 February 2000

Gentlefolk;

I am a lifetime resident of Southeast Alaska and have lived in Tenakee for the last three years. My partner, Anke Wagner (on whose behalf I am also writing), and I are modest consumers of forest products, both privately and professionally. As such, we are not opposed to timber harvest in Tongass National Forest. We do feel, however, that political and procedural pressures have resulted in a disproportionate concentration of 'harvest' in the Tenakee Inlet and Freshwater Bay watersheds. At 21.4 MMBF, the preferred alternative for the proposed Finger Mountain Sale dramatically accelerates this imbalance.

We found the Finger Mountain Timber Sale Draft EIS (DEIS) to be significantly lacking in the following respects:

The Chichagoff Conservation Council (CCC) Alternative was eliminated from detailed study on the grounds that "...the issues it addressed were already included in other alternatives" (DEIS 2.9). The various action alternatives "...represent different means of satisfying the purpose and need than does the proposed action, by responding with different emphases to the significant issues..." (DEIS 2.10). Thus the alternatives are more than the sum of their parts. Elimination of the public input alternative means inadequate representation of the proposal and its emphases, inadequate evaluation of the cumulative impact (and corollary reduction of alternate impacts) and removes any basis for exploration of middle-ground proposals. Worst, it constitutes a 'breach of faith' with the public, who were assured Mr. Franzel, among others, that their proposals would be seriously evaluated.

5-1

The 'Significant Issues' and 'Other Issues and Concerns' sections of the DEIS (1.11 and 1.12) failed to note at least three issues discussed at length in scoping and informational meetings held in Tenakee:

a) Watershed Integrity of Little Seal Bay

Concern and objection to the expansion of logging operations into the watershed of Little Seal Bay was repeatedly expressed, and yet are not noted in the DEIS. Alternative B ('preferred') nevertheless proposes extensive road construction and clear-cuts up-stream and up-land of the bay AND its Old Growth Habitat Area.

11-4

b) Objections to New Road Construction

Public opposition to extensive construction of new roads in the project area was vehement, yet the issue was not identified under rubric. The issue involves a host of related concerns, only some of which were addressed by the DEIS. Alternative B proposes the extensive construction of new roads.

3-1

c) Disturbance from Helicopter Logging

Helicopter logging roused serious objections due to noise and visual impacts on the City of Tenakee, as well as animal populations. Alternative technologies

3-2

(such as 'balloon' logging) were dismissed out of hand by USDA FS representatives at scoping and informational meetings, which I believe was improper and exceeded their authority.

d) Insufficient Post-treatment of Harvest Areas

Concerns were raised that older harvest areas in the project area and those in Tenakee Inlet/Freshwater Bay had not received proper post-harvest treatment (reseeding, thinning, etc.), and that proposed areas would fare no better. The DEIS (3.57) makes no promises.

11-13

e) Harvest Volume

The harvest volume from Finger Mountain and other areas in the vicinity of Tenakee Inlet and Freshwater Bay is a distinct issue. The DEIS does not make accessible (e.g., shown as a pie chart) the annual percentage contribution burden carried by each alternative to the Sitka Ranger District's share of annual harvest requirements, nor to annual requirements for the Tongass as a whole. Figures were requested in meetings for all alternatives in this area as well as cumulative figures for the greater area.

8-2

These are prime issues of public concern, which the public was assured would be addressed as such. By failing to organize discussion under these more headers, they become subordinate issues lost in discussion of 'management practices.'

Finally, I object to what appears to be 'stacking' in the organization of the three action alternatives (B, D, and F). As mentioned, elimination of alternative CCC removes the baseline of public input. Alternative B (preferred) is the high-volume alternative with heavy new road construction, and invades the Little Seal Bay watershed. Alternative D is high-volume with extensive new road construction and helicopter logging, and invades the Little Seal Bay watershed. It may therefore be ruled out as a 'middle-ground' alternative. Alternative F makes extensive use of helicopter logging, but is otherwise best in line with public wishes for the area. The nuisance impact of helicopter logging, however, reduces the viability of alternative F in the public mind, 'stacking' the deck

for the preferred alternative.

That this is an artificial situation may be seen by subtracting the Little Seal Bay/Inbetween Creek (VCU 230) from alternative B. This gives a harvest of 12.6 MMBF (greater than proposed in alternative F), keeps clear of virgin watersheds, uses no helicopters and maintains the 'viewshed' at the level of alternative B. This would yield a viable alternative by FS standards, which would be a sight closer to viable in the public mind as well.

In conclusion, given the alternatives presented in the DEIS, I must support alternative A and oppose all others. I would support the CCC alternative and consider its variations. Given the omissions to the DEIS, I would recommend another draft round which adequately reflects public input.

Sincerely,

Dave Zeiger
Anke Wagner

P.O.Box 631
Tenakee Springs, AK 99841

davanke@yahoo.com

James Franzel, District Ranger
Attn: Finger Mountain EIS
204 Signaka Way
Sitka, AK 99835

Dear Mr. Franzel,

I am totally opposed to the proposed Finger Mountain Timber Sale in Tenakee Inlet.

In the last thirty years I have observed the over-zealous harvesting of the Inlet's resources; timber, fish and game. Tenakee Inlet is a prime recreation and commercial fishing area as well as a subsistence area used by the residence of the Inlet.

Sincerely,

Richard A. Zagars
P.O. Box 623
Tenakee Springs, AK 99841

2-1

To: James Franzel, district ranger
Attn: Finger Mountain EIS
204 Signaka Way
Sitka, AK 99835

I strongly recommend your Alternative Action, "A", NO ACTION, on your proposal to cut timber in this area.

I feel that the impact on the crab and shrimp resources in Tenakee Inlet by the overall logging operation, could be devastating.

Sincerely,

Sheila J. Zagars

Sheila J. Zagars
P.O. Box 623
Tenakee Springs, AK 99841

2-1

Appendix E

Project-specific Mitigation Measures

Appendix E

Continuation of Form 1041

Page 2 of 2

Appendix E

Project-specific Mitigation Measures

General Mitigation Measures

These general measures may apply to all units and roads in a project area and/or they may apply to other portions of a project area. The source(s) of each general measure are listed after the measure in terms of individual Forest-wide Standards and Guidelines (see Chapter 4 of the 1997 Forest Plan) or Best Management Practices (BMPs) (see Appendix C of the 1997 Forest Plan and Chapter 10 of Forest Service Handbook 2509.22, the Soil and Water Conservation Handbook). Specific mitigation measures that are applied to selected units and/or roads in a project are identified in the section that follows the general measures.

Air Quality Protection: Design projects to control air pollution impacts and to ensure that the predicted emissions from all pollution sources do not exceed ambient air quality standards, as specified under the Alaska Administration Code, Title 18, Chapter 50; burning permits will be obtained from ADEC for all fire projects. (AIR 112).

Soil/Water Protection during Timber Sale Planning: Incorporate soil and water resource considerations into timber sale planning. Include site-specific considerations, site preparation, designating water quality protection needs on sale area maps, locating and designing landings for good drainage and dispersion of water, incorporating erosion control and timing responsibilities into the Operating Schedule, scheduling and enforcement of erosion control during and at completion of the timber sale, including non-recurring C provisions to protect soil and water resources in timber sale contracts, and seeking an environmental modification of the contract if new circumstances or conditions indicate that soil, water, or watershed damage may occur. (BMP 13.1, 13.2, 13.3, 13.4, 13.10, 13.11, 13.12, 13.14, 13.17, and 13.18)

Soil/Water Protection during Road Development: Implement measures to reduce surface erosion and drainage interruption related to transportation including water barring and cross-draining roads using ditches and culverts to prevent water running long distances over roads, closure, and seeding and fertilizing cut-and-fill slopes. (BMPs 14.1, 14.2, 14.3, 14.5, 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, and 14.19)

Soil/Water Protection during Road Management: Conduct road maintenance and snow removal operations to minimize disruption of road surfaces, embankments, ditches, and drainage facilities, and use road closures or other measures to keep road surface and road site erosion at low or background levels. (TRAN23-I, BMPs 14.20 and 14.23)

Management of Road Use to Reduce Erosion and Sedimentation: Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions. (BMP 14.22)

Temporary Road Obliteration: Obliterate temporary roads after use, remove or bypass drainage structures and install waterbars in appropriate places. (RIP2-II and BMPs 12.17 and 14.24)

Soil/Water Protection during Development of Rock Sources, LTFs, & Other Facilities: Implement measures to reduce surface erosion and other impacts on soils and water from

gravel sources and quarries, LTFs, sort yards, and other facilities. (BMPs 14.18, 14.19, 14.25, 14.26, and 14.27)

LTF Siting: Site LTFs in locations which will best avoid or minimize potential impacts on water quality, aquatic habitat, wildlife, and other resources. (TRAN214-V, WILD112, and BMP 14.4)

Camp and Facility Siting: Site camps and other facilities sufficiently far from important seasonal bear concentrations, raptor nest sites, and other important wildlife habitats, to avoid or minimize wildlife-human conflicts. (WILD112).

Sanitation at Facilities: Comply with all regulations for the disposal of sewage at camps, LTFs, and other facilities; require incinerators and/or other bear-proof garbage disposal methods at work camps. (FAC1, FAC22, WILD112-VI, BMP 12.10, 12.15, and 12.16).

Accidental Spills: Implement measures and plans to prevent the contamination of soil and water from accidental spills of petroleum products and hazardous substances. (BMP 12.8 and 12.9)

Heritage Site Discovery: Suspend work if a heritage site is discovered during project implementation. Authorize resumption of work only after consultation with the State Historic Preservation Office is complete.

Karst/Cave Inventory: Inventory karst landscapes and cave resources prior to initiation of project planning (including the use of dye tracing). (KARST-III)

Maximum Size of Created Openings: Limit created openings to a maximum size of 100 acres.

Maintain Advance Regeneration: Maintain advance regeneration within the unit to meet reforestation needs and stand objectives. (TIM111-2-I)

Maintain Minor Tree Species: Selectively maintain minor species (e.g., yellow-cedar, western redcedar, Pacific yew), where appropriate for the site, as viable components of future stand, for vegetative diversity, and for seed trees. (TIM111-2-I, TIM114-II)

Windthrow Hazards Along the Boundaries of Protected LUDs: Take measures that protect LUDs which prohibit timber harvest activities from harvested related windthrow. (TIM114-XII)

Certification of Reforestation: Certify that every unit that receives a final harvest meets or surpasses the stocking guidelines and certification standards (FSH 2409.17) within 5 years. (TIM24)

Wetland Protection: Minimize the loss of all wetlands, but particularly the higher value wetlands (especially fens), and minimize the adverse impacts of land management activities on wetlands; follow Executive Order 11990 and the BMPs. (WET-I, WET-III, BMP 12.5)

Beach and Estuary Fringe Protection: Avoid harvest within the beach and estuary fringe; avoid road construction within this zone, except where no feasible alternative exists. (BEACH 2)

Non-Development LUD Protection: Avoid timber harvest impacts and minimize road construction within non-development LUDs such as Old-Growth Habitat, Remote and Semi-remote Recreation, and Wild and Scenic River corridors.

Connectivity Between Old Growth Reserves: Provide corridors of old growth forest between and among medium and large old-growth reserves. Where sufficient connectivity does not exist, or where the minimum Forest Plan criteria are not met, relocate or redesign mapped, small old growth reserves. (WILD112-XVIII)

Marine Mammal Protection: Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, porpoises, seals, and sea lions. Site camps, LTFs, and other facilities at least 1 mile away from known Stellar sea lion haulouts. (TE&S-I)

Site-specific Mitigation Measures Incorporated into Unit and Road Design

The specific mitigation measures that are applied to selected units and/or roads in a project are identified in this section. The source(s) of each general measure are listed after the measure in terms of individual Forest-wide standards and guidelines (see Chapter 4 of the 1997 Forest Plan) or BMPs (see Appendix C of the 1997 Forest Plan and Chapter 10 of Forest Service Handbook 2509.22, the Soil and Water Conservation Handbook). For site-specific mitigation measures applicable to the Finger Mountain Timber Sale(s) Project, the tables following this list indicate to which units and/or roads each measure applies. See also Appendices B and C.

MINERALS AND GEOLOGY

- M1 Protection of Mineral Development Improvements:** Protect known mineral development improvements, such as mine claim markers, by specifications in timber sale and road construction contracts. (MG12 - II)
- M2 Access to Mining Claims:** Permit reasonable access to mining claims in accordance with approved plans of operation. (MG12-I)

KARST AND CAVE RESOURCES

- K1 Avoid Effects on Karst/Cave Features:** Avoid road construction or modify harvest unit design to avoid impacts on karst or cave features (KARST - III4)
- K2 Suspension Requirements to Protect Karst/Cave Features:** Use partial to full suspension for yarding to reduce effects of harvest on karst or cave resources. (KARST - III4 and Appendix I)
- K3 Other Specific Protection Measures for Karst/Cave Features:** Develop site-specific protective measures for karst and cave features (KARST - III4)
- K4 Protection of Adjacent High Vulnerability Karst Lands:** Apply protection guidelines in Appendix I (TLMP 1997) for high vulnerability karst lands adjacent to harvest units. (KARST-III)

FISH, WATER, AND SOILS

- F1 Riparian Buffers:** Establish no-harvest and selective cut buffers along streams and around lakes to protect riparian areas as defined by the Riparian Standards and Guidelines. Protect buffers from adjacent harvest activities (e.g., directional felling, split yarding, suspension requirements). (RIP2, BMP 12.6)
- F2 Directional Felling Along Buffers:** Trees identified for harvest will be felled to avoid riparian areas designated for "no commercial harvest" and stream courses. (RIP2-II)
- F3 Class III/IV Stream Protection:** Split yard and directionally fall trees away from Class III and IV streams without buffers. (RIP2-II)

- F4 Yarding Across Streams:** Fully suspend logs where yarding is to be done across streams or the full length of a stream or drainage. (RIP2-II)
- F5 Fish Passage:** Maintain fish passage at Class I and II stream road crossings using properly designed stream crossing structures (consult the Aquatic Habitat Management Handbook, FSH 2609.24). (FISH112-IV)
- F6 Use of Bridges:** Install bridges at designated stream crossings to minimize the amount of sediment entering streams and/or to ensure good fish passage (TRAN214-II).
- F7 Instream Construction Timing Restrictions:** Implement timing restrictions for instream construction activities for the protection of anadromous and resident fish. (RIP2-II and BMPs 14.6, 14.10, 14.14, and 14.17)
- F8 Siting of Road-Stream Crossings:** Modify the location of road-stream crossings to correspond with stable stream reaches. (TRAN214-II)
- F9 Routing of Roads near Streams:** Modify road routes to avoid locations near fish-bearing streams. (TRAN214-II)
- F10 Routing of Roads through Wetlands and Other Sensitive Areas:** Modify location of Forest Development Roads to minimize impact to wetlands, floodplains, estuaries, and tidal meadows. (TRAN214-III)
- F11 Harvesting Timber in/near Wetlands and Floodplains:** Modify unit design or logging system to avoid or minimize damage to muskegs, other wetlands, or floodplains. (S&W112-I, BMP 12.4 and 12.5)
- F12 Management of Road Use to Reduce Erosion and Sedimentation:** Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions. (BMP 14.22)
- F13 Storm-proofing Roads:** Design system roads with oversized culverts, outfall riprap, armored dips adjacent to culverts, substantial ditch blocks, drivable waterbars, and/or other measures to prevent culvert failure or erosion during periods of inactivity. (TRAN22-I)
- F14 Road Storage:** Establish self-maintaining drainages across roads, remove bridges and reestablish natural drainage patterns, and establish vegetation cover on the road to prevent erosion during periods of inactivity. (TRAN22-I)
- F15 Avoid Harvesting Very High Hazard Soils:** Modify unit design to avoid very high mass movement areas, including slopes > 72%. (S&W112-I, BMP 13.5)
- F16 Avoid Road Development on Very High Hazard Soils:** Avoid road construction along unstable slopes, including slopes > 67%. (S&W112-I and BMP13.5)
- F17 Soil/Water Protection along Roads on Very High Hazard Soils:** Where avoidance of road construction along unstable slopes is not possible, take special precautions with fill to prevent soil erosion, stream sedimentation, and mass wasting or require full bench construction and end hauling of excavated material. (S&W112-I, TRAN214-II, and BMP 14.7)
- F18 Suspension Requirements to Protect Soils:** Use partial- to full-suspension logging systems in areas with high mass movement potential or McGilvery soils. (S&W112-I, BMP 13.9)

- F19 Steep, Class IV, V-notch Streams:** Establish no-harvest buffers along steep, Class IV, v-notch streams with high erosion potential (S&W112-I, BMP 12.6 and 13.16)
- F20 Public Water Supply Protection:** Protect public water supplies by implementing special measures during/after harvest or road construction. (S&W112-III)
- F21 Watershed Analysis:** Conduct watershed analysis (per Appendix J) in order to refine prescriptions and more fully address cumulative watershed effects. (S&W112-II, BMP 12.1)
- F22 Watershed Rehabilitation:** Conduct rehabilitation activities where previous mass wasting threatens water quality or where degraded watershed conditions are identified. (S&W2-I, BMP 12.2 and 12.3)
- F23 Fish Habitat Improvement or Restoration:** Conduct fish habitat improvement or restoration; includes improvements to stream banks and stream channel processes, large woody debris, and water quality/temperature. (FISH 112 - IVC,D,E, and F and FISH 22)

TIMBER

- T1 Maintain Advance Regeneration:** Maintain advance regeneration within the unit to meet reforestation needs and stand objectives. (TIM111-2-I)
- T2 Maintain Minor Tree Species:** Selectively maintain minor species (e.g., yellow-cedar, western redcedar, Pacific yew), where appropriate for the site, as viable components of future stand, for vegetative diversity, and for seed trees. (TIM111-2-I, TIM114-II)
- T3 Prescribed Fire for Enhancement:** Use prescribed fire for silvicultural site preparation, wildlife habitat improvement, or slash hazard treatment. (FIRE2-I)

WILDLIFE AND THREATENED/ENDANGERED/SENSITIVE SPECIES

- W1 Clearcutting with Reserves:** Provide for greater habitat diversity on a stand level over time by using clearcutting with reserve trees (even-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112 - III)
- W2 Seed Tree Method:** Provide for greater habitat diversity on a stand level over time by using the seed tree method (even-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112 - III)
- W3 Shelterwood Method:** Provide for greater habitat diversity on a stand level over time by using the shelterwood method (even-aged or two-aged systems) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112 - III)
- W4 Reserves Under a Two-aged Harvest System:** Provide for greater habitat diversity on a stand level over time by leaving reserve trees (two-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112 - III)
- W5 Patch or Strip Clearcutting:** Provide for greater habitat diversity on a stand level over time by using patch or strip clearcutting (two-aged or uneven-aged systems) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112-III)
- W6 Selection Harvest:** Provide for greater habitat diversity on a stand level over time by using the selection method (uneven-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (WILD112 - III)

- W7 Leaving Nonmerchantable Trees and Snags:** Provide for greater habitat diversity on a stand level over time by leaving most nonmerchantable trees and snags after harvest. (WILD112 - III)
- W8 Restrictions on Helicopter Yarding:** Modify helicopter yarding routes and/or timing of helicopter activity to avoid important wildlife habitats (e.g., mountain goat summer/kidding habitat or active eagle nest sites. (WILD112-XII)
- W9 Road Closures:** Close roads to motorized use to protect brown bears, wolves, marten and other large predators and furbearers from over harvest. (WILD112)
- W10 Protection of Goshawk Nests:** Avoid harvest and road construction near confirmed and probable northern goshawk nest sites according to Forest-wide Standard & Guideline TE&S-II,J,1. (TE&S-II)
- W11 Timing of Activities and Disturbance at Goshawk Nests:** Avoid continuous disturbance within 600 feet of an active goshawk nest from March 15 to August 15 (TE&S-II).
- W12 Management of Goshawk Foraging Habitat:** Maintain important features of forest stand structure in harvest units in order to manage goshawk foraging habitat according to Forest-wide Standard & Guideline TE&S-II,J,4. (this applies to certain VCU's on Prince of Wales Island) (TE&S-II)
- W13 Protection of Bald Eagle Nest Trees/Other Sites and Timing of Activities:** Avoid all activity, modify unit or road design, and/or limit timing of activities, near bald eagle nest trees, perch trees, and winter roost sites in accordance with the Interagency Agreement established with the U.S. Fish and Wildlife Service. (WILD112-V)
- W14 Protection of Peregrine Falcon Nests and Timing of Activities:** Avoid all activity, modify unit or road design, and/or limit timing of activities, within 2 miles of known peregrine falcon nest sites to avoid impacts. (TE&S-II)
- W15 Protection of Osprey Nests and Timing of Activities:** Avoid all activity, modify unit or road design, and/or limit timing of activities, within 330 feet of existing osprey nest trees to avoid impacts. (TE&S-II)
- W16 Protection of Marbled Murrelet Nests:** Maintain a 600-foot, generally circular, radius of undisturbed forest habitat surrounding identified marbled murrelet nests, where available. (WILD112-XII)
- W17 Timing of Activities and Disturbance of Nesting Murrelets:** Minimize disturbance activities within 600 feet of marbled murrelet nests during the nesting season (May 1 - August 15). (WILD112-XII)
- W18 Protection of Waterfowl or Shorebird Concentrations:** Modify unit or road design to keep habitat changes as far from known waterfowl or shorebird concentrations and nesting areas as feasible (at least 330 feet). (WILD112-IX)
- W19 Timing of Activities and Disturbance of Waterfowl:** Minimize disturbance of waterfowl, by restricting development activities to periods when waterfowl are absent from the area. (WILD112-IX)
- W20 Protection of Trumpeter Swan Nesting, Brooding, and Wintering Areas and Timing of Activities:** Avoid all activity, modify unit or road design, and/or limit timing of activities, within 0.5 mile of wetlands used by nesting, brood-rearing, and wintering trumpeter swans to avoid impacts. (TE&S-II)

- W21 Protection of Heron Rookeries and Raptor Nests:** Protect active heron rookeries and raptor nests (bald eagle, northern goshawk and osprey are covered by other measures) by providing 600-foot windfirm buffers, where available. (WILD112-X)
- W22 Timing of Activities and Disturbance of Herons and Raptors during Nesting:** Minimize disturbance of heron rookeries and raptor nests, by restricting development activities to periods outside the active nesting season (generally March 1 to July 31). (WILD112-X)
- W23 Buffers Along Brown Bear Streams:** Establish forested buffers, where available, of approximately 500 feet along streams, where additional protective measures are needed to provide cover for brown bears while feeding. (WILD112-VI)
- W24 Protection of Wolf Dens:** Maintain a 1,200-foot forested buffer, where available, around known active wolf dens. (WILD112-XI)
- W25 Timing of Activities and Disturbance of Denning Wolves:** Avoid road construction within 600 feet of known active wolf dens. (WILD112-XI)
- W26 Protection of Mountain Goat Wintering Habitat and Travel Corridors:** Avoid harvest in important mountain goat wintering habitat and within travel corridors between seasonal sites. (WILD112-XII)
- W27 Timing of Activities and Disturbance of Wintering/Kidding Mountain Goats:** Seasonally restrict or regulate project activities within 1 mile of important mountain goat wintering and kidding habitat. (WILD112-XII)
- W28 Management of Marten Habitat:** Maintain important features of forest stand structure in harvest units in order to manage high value marten habitat according to Forest-wide Standard & Guideline WILD112-XVI,A,2. (this applies to VCUs in higher risk biogeographic provinces). (WILD112-XVI)
- W29 Rare or Endemic Terrestrial Mammals:** Modify units or roads to avoid habitats supporting rare or endemic terrestrial mammals that may represent unique populations with restricted ranges. (WILD112-XVII)
- W30 Protection of Sensitive Fish Species:** Avoid the placement of facilities near streams containing runs of Island king salmon or Fish Creek chum salmon or Pike Lakes northern pike to avoid increased harvest pressure. (TE&S-II)
- W31 Protection of Sensitive Plant Species:** Modify unit boundaries or road routing to avoid habitats supporting populations of sensitive plant species. (TE&S-II)
- W32 Protection of Candidate Species or Species of Concern:** Modify units, roads, or other facilities to avoid or reduce impacts on U.S. Fish and Wildlife Service-designated Candidate species and Species of Concern. (TE&S-III)
- W33 Corridors Between Old-Growth Habitat Reserves:** Avoid harvest in order to maintain corridors of old-growth forest between Old-growth Habitat Reserves and other natural setting LUDs at the landscape scale. (WILD112-XVIII)
- W34 Wildlife Habitat Restoration or Enhancement:** Conduct wildlife habitat restoration in young-growth conifer stands to accelerate development of advanced seral stand structure. Treatments may include thinning of young stands, release pruning, fertilization, or prescribed fire. (may be appropriate in high value deer or moose winter range, along beach fringe, etc.) (WILD22-1 and FIRE2-I)

HERITAGE RESOURCES

- H1 Avoid Direct Effects on Heritage Resource Sites:** Avoid road construction or harvest unit placement in areas with heritage resource value. (HER - IV)
- H2 Avoid Indirect Effects on Heritage Resource Sites:** Provide for protection from indirect effects on heritage resource sites near proposed harvest units and roads. (HER - V4)
- H3 Mitigation through Data Recovery:** Mitigate valuable heritage resource sites through data recovery. (HER - IV)
- H4 Interpretive Messages for Heritage Resources:** Develop appropriate interpretive messages for heritage resource sites in the project area. (HER - IC and HER - V)

RECREATION AND TOURISM

- R1 Access Restrictions for Recreation:** Close or restrict access on roads to maintain remoteness of areas after harvest (REC112-II)
- R2 Access Improvement for Recreation:** Open roads after project implementation to take advantage of opportunities created by new access. (REC112-II)
- R3 Recreation Enhancement:** Enhance existing and/or provide additional recreation activities, opportunities, and services, to meet demands. (REC112-II)

SCENERY

- V4 Reserves Under a Two-aged Harvest System:** Reduce visual contrast with adjacent areas by leaving reserve trees under a two-aged system as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11-III)
- V2 Seed Tree Method:** Reduce visual contrast with adjacent areas by using the seed tree method (even-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11 - III)
- V3 Shelterwood Method:** Reduce visual contrast with adjacent areas by using the shelterwood method (even-aged or two-aged systems) as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11 - III)
- V4 Reserves Under a Two-aged Harvest System:** Reduce visual contrast with adjacent areas by leaving reserve trees under a two-aged system as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11-III)
- V5 Patch/Strip Clearcutting:** Reduce visual contrast with adjacent areas by using patch or strip clearcutting (two-aged or uneven-aged systems) as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11-III)
- V6 Selection Harvest:** Reduce visual contrast with adjacent areas by using the selection method (uneven-aged system) as a harvest prescription (see Appendix G to Forest Plan FEIS). (VIS11 - III)
- V7 Leaving Nonmerchantable Trees:** Reduce visual contrast with adjacent areas by leaving most nonmerchantable trees after harvest. (VIS11 - III)
- V8 Modification of Unit Boundaries:** Modify unit boundaries to assure that the harvest unit meets the proposed VQO in partial retention and retention areas. (VIS11-II)
- V9 Treatment of Rock Sources:** Locate rock sources off the road along Visual Priority Routes, so that rock source development is not apparent from the road and/or use a landscape architect in the planning/design of rock pits. (VIS11-II)

- V10 Roadside Cleanup:** Provide for roadside cleanup of ground-disturbing activities in partial retention and retention areas. (VIS11-II)
- V11 LTF Design:** Use low profile LTF design to minimize visibility from Visual Priority Travel Routes and Use Areas. (VIS11-II)
- V12 Temporary LTFs:** Use temporary LTF and incorporate rehabilitation measures into project analysis and the contract package to reduce long-term visual effects in partial retention areas. (VIS11 - II)

SUBSISTENCE

- S1 Access Restrictions for Subsistence:** Close or restrict access on roads to maintain remoteness of areas after harvest to address subsistence issues. (SUB-I)
- S2 Access Improvement for Subsistence:** Open roads after project implementation to address subsistence issues. (SUB-I)
- S3 Enhancement of Facilities:** Develop or enhance facilities for subsistence users (e.g., anchorages, shelters). (SUB-I)

Mitigation Measures by Unit and Alternative

For each of the site-specific mitigation measures listed above that applies to the Finger Mountain Timber Sale(s) Project, the tables on the following pages indicate the units, roads, and alternatives to which the measures apply.

Table E – 1
Site-specific Mitigation for VCUs: Fish, Water, and Soils

VCU	Units	Alternatives				Fish, Water, and Soils														
		B	D	F	H	F1	F2	F3	F4	F5	F7	F8	F10	F11	F12	F13	F14	F15	F18	F19
230	1440		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1450		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1520	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1521	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1522	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1540	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1550	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1551		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1552	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1560		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1570		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1572		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1590A	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1590B	x	x			x	x	x	x		x	x			x	x	x	x	x	x
230	1593B	x	x			x	x	x	x		x	x			x	x	x	x	x	x
230	1610		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1620	x	x			x	x	x	x		x	x			x	x	x	x	x	x
230	1640		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1650	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1660	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1670	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1680		x			x	x	x	x		x	x			x	x	x	x	x	x
230	1720	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1730	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1731	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1750A	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1750B	x				x	x	x	x		x	x			x	x	x	x	x	x
230	1770	x				x	x	x	x	x	x	x			x	x	x	x	x	x
230	1780	x				x	x	x	x		x	x			x	x	x	x	x	x
233	1950H			x		x	x	x	x					x				x	x	x
233	1951H		x			x	x	x	x					x				x	x	x
233	1951H			x		x	x	x	x					x				x	x	x
233	1952H		x			x	x	x	x					x				x	x	x
233	1952H			x		x	x	x	x					x				x	x	x

VCU	Units	Alternatives				Fish, Water, and Soils														
		B	D	F	H	F1	F2	F3	F4	F5	F7	F8	F10	F11	F12	F13	F14	F15	F18	F19
233	1970			x		x	x	x	x		x	x		x	x	x	x	x	x	x
233	1971			x		x	x	x	x	x	x	x		x	x	x	x	x	x	x
233	1973	x	x			x	x	x	x		x	x			x	x	x	x	x	x
233	1973			x		x	x	x	x		x	x		x	x	x	x	x	x	x
233	1976	x	x			x	x	x	x		x	x			x	x	x	x	x	x
233	1976			x		x	x	x	x		x	x		x	x	x	x	x	x	x
233	1977	x	x			x	x	x	x		x	x			x	x	x	x	x	x
233	1977			x		x	x	x	x		x	x		x	x	x	x	x	x	x
233	1980	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
233	1981	x				x	x	x	x		x	x			x	x	x	x	x	x
233	1983		x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
233	1984		x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
233	1985		x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
233	1990B		x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
233	1992	x	x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
233	2000		x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
233	2021		x	x		x	x	x	x					x				x	x	x
233	2030	x	x		x	x	x	x	x		x	x			x	x	x	x	x	x
233	2030			x		x	x	x	x					x				x	x	x
233	2030H			x		x	x	x	x					x				x	x	x
233	2040A	x	x			x	x	x	x		x	x			x	x	x	x	x	x
233	2040A			x		x	x	x	x					x				x	x	x
233	2040B	x	x			x	x	x	x		x	x			x	x	x	x	x	x
233/4	2040B			x		x	x	x	x					x				x	x	x
233/4	6047			x		x	x	x	x					x				x	x	x
233	6054H			x		x	x	x	x					x				x	x	x
233	6055H			x		x	x	x	x					x				x	x	x
234	1801		x			x	x	x	x						x	x	x	x	x	x
234	1801			x		x	x	x	x						x	x	x	x	x	x
234	1802		x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x
234	1803A		x	x	x	x	x	x	x		x	x			x	x	x	x	x	x
234	1803B		x	x	x	x	x	x	x						x	x	x	x	x	x
234	1804		x			x	x	x	x	x	x	x			x	x	x	x	x	x
234	1804			x		x	x	x	x	x	x	x			x	x	x	x	x	x
234	1805H		x	x		x	x	x	x					x				x	x	x
234	1810	x	x	x		x	x	x	x		x	x			x	x	x	x	x	x
234	1811	x				x	x	x	x		x	x			x	x	x	x	x	x
234	1812		x			x	x	x	x		x	x			x	x	x	x	x	x
234	1812			x		x	x	x	x					x				x	x	x
234	1813		x	x		x	x	x	x		x	x			x	x	x	x	x	x
234	1813H		x	x		x	x	x	x					x	x	x	x	x	x	x
234	1815H		x	x		x	x	x	x					x				x	x	x
234	1820	x	x	x		x	x	x	x		x	x			x	x	x	x	x	x

Appendix E

VCU	Units	Alternatives				Fish, Water, and Soils														
		B	D	F	H	F1	F2	F3	F4	F5	F7	F8	F10	F11	F12	F13	F14	F15	F18	F19
234	1830	x				x	x	x	x		x	x			x	x	x	x	x	x
234	1850	x				x	x	x	x		x	x		x	x	x	x	x	x	x
234	1852					x	x	x	x		x	x		x	x	x	x	x	x	x
234	1853	x				x	x	x	x		x	x			x	x	x	x	x	x

Table E – 2
Site-specific Mitigation for VCUs: Wildlife and Threatened, Endangered, and Sensitive Species

VCU	Units	Alternatives				Wildlife & TES Species									
		B	D	F	H	W1	W4	W5	W6	W7	W9	W11*	W21*	W28*	W33
230	1440		x							x	x	x	x		
230	1450		x							x	x	x	x		
230	1520	x								x	x	x	x		
230	1521	x								x	x	x	x		
230	1522	x								x	x	x	x		
230	1540	x				x				x	x	x	x		
230	1550	x								x	x	x	x		
230	1551		x			x				x	x	x	x		
230	1552	x								x	x	x	x		
230	1560		x			x				x	x	x	x		
230	1570		x							x	x	x	x		
230	1572		x			x	x			x	x	x	x		
230	1590A	x								x	x	x	x		
230	1590B	x	x			x				x	x	x	x		
230	1593B	x	x							x	x	x	x		
230	1610		x			x				x	x	x	x		
230	1620	x	x			x				x	x	x	x	x	
230	1640		x			x	x			x	x	x	x		
230	1650	x				x				x	x	x	x		
230	1660	x								x	x	x	x		
230	1670	x				x				x	x	x	x		
230	1680		x			x				x	x	x	x		
230	1720	x				x				x	x	x	x		
230	1730	x				x				x	x	x	x	x	
230	1731	x					x			x	x	x	x	x	
230	1750A	x							x	x	x	x	x	x	
230	1750B	x				x				x	x	x	x	x	
230	1770	x				x				x	x	x	x		
230	1780	x				x				x	x	x	x		
233	1950H			x					x	x		x	x		
233	1951H		x			x				x		x	x		
233	1951H			x					x	x		x	x		
233	1952H		x			x	x			x		x	x		
233	1952H			x					x	x		x	x		
233	1970			x					x	x	x	x	x		
233	1971			x					x	x	x	x	x		
233	1973	x	x			x				x	x	x	x		
233	1973			x					x	x		x	x		
233	1976	x	x			x				x	x	x	x		
233	1976			x					x	x		x	x		

Appendix E

VCU	Units	Alternatives				Wildlife & TES Species									
		B	D	F	H	W1	W4	W5	W6	W7	W9	W11*	W21*	W28*	W33
233	1977	x	x			x				x	x	x	x		
233	1977			x					x	x		x	x		
233	1980	x	x	x	x	x				x	x	x	x		
233	1981	x				x				x	x	x	x	x	
233	1983		x	x	x	x				x	x	x	x		
233	1984		x	x	x	x				x	x	x	x	x	
233	1985		x	x	x	x				x	x	x	x		
233	1990B		x	x	x		x			x	x	x	x		
233	1992	x	x	x	x	x				x	x	x	x		
233	2000		x	x	x		x			x	x	x	x	x	
233	2021		x	x					x	x		x	x		
233	2030	x	x		x	x				x	x	x	x		
233	2030			x					x	x		x	x		
233	2030H			x					x	x		x	x		
233	2040A	x	x				x			x	x	x	x	x	
233	2040A			x					x	x		x	x	x	
233	2040B	x	x			x				x	x	x	x	x	
233/4	2040B			x					x	x		x	x	x	
233/4	6047			x					x	x		x	x	x	
233	6054H			x					x	x		x	x		
233	6055H			x					x	x		x	x		
234	1801		x							x	x	x	x		
234	1801			x				x		x	x	x	x		x
234	1802		x			x				x	x	x	x		
234	1802			x	x			x		x	x	x	x		x
234	1803A		x	x	x					x	x	x	x		
234	1803B		x							x		x	x		
234	1803B			x	x				x	x		x	x		
234	1804		x			x				x	x	x	x	x	
234	1804			x	x			x		x	x	x	x	x	x
234	1805H		x	x					x	x		x	x	x	
234	1810	x	x	x		x	x			x	x	x	x		
234	1811	x				x				x	x	x	x		
234	1812		x				x			x	x	x	x	x	
234	1812			x					x	x		x	x	x	
234	1813		x	x					x	x	x	x	x		
234	1813H		x	x					x	x		x	x	x	
234	1815H		x	x					x	x		x	x	x	
234	1820	x	x	x		x	x			x	x	x	x		
234	1830	x				x	x			x	x	x	x		
234	1850	x				x	x			x	x	x	x	x	
234	1852									x	x	x	x		
234	1853	x				x	x			x	x	x	x	x	

Table E – 3
Site-specific Mitigation for VCUs: Timber, Recreation, Scenery, and Subsistence

VCU	Units	Alternatives				Timber	Recreation	Scenery						Subsistence
		B	D	F	H	T2	R1	V1	V4	V5	V6	V7	V8	S1
230	1440		x			x	x				x			x
230	1450		x			x	x				x			x
230	1520	x				x	x							x
230	1521	x				x	x							x
230	1522	x				x	x							x
230	1540	x				x	x	x						x
230	1550	x				x	x							x
230	1551		x			x	x	x						x
230	1552	x				x	x							x
230	1560		x			x	x	x						x
230	1570		x			x	x				x			x
230	1572		x			x	x	x	x		x			x
230	1590A	x				x	x							x
230	1590B	x	x			x	x	x						x
230	1593B	x	x			x	x							x
230	1610		x			x	x	x						x
230	1620	x	x			x	x	x						x
230	1640		x			x	x	x	x		x			x
230	1650	x				x	x	x			x			x
230	1660	x				x	x							x
230	1670	x				x	x	x						x
230	1680		x			x	x	x			x		x	x
230	1720	x				x	x	x						x
230	1730	x				x	x	x						x
230	1731	x				x	x		x					x
230	1750A	x				x	x				x			x
230	1750B	x				x	x	x						x
230	1770	x				x	x	x						x
230	1780	x				x	x	x						x
233	1950H			x		x					x			
233	1951H		x			x		x						
233	1951H			x		x					x			
233	1952H		x			x		x	x					
233	1952H			x		x					x			
233	1970			x		x	x				x			x
233	1971			x		x	x				x			x
233	1973	x	x			x	x	x						x
233	1973			x		x					x			
233	1976	x	x			x	x	x						x
233	1976			x		x					x			

Appendix E

VCU	Units	Alternatives				Timber	Recreation	Scenery						Subsistence
		B	D	F	H	T2	R1	V1	V4	V5	V6	V7	V8	S1
233	1977	x	x			x	x	x						x
233	1977			x		x					x			
233	1980	x	x	x	x	x	x	x						x
233	1981	x				x	x	x						x
233	1983		x	x	x	x	x	x						x
233	1984		x	x	x	x	x	x						x
233	1985		x	x	x	x	x	x						x
233	1990B		x	x	x	x	x		x					x
233	1992	x	x	x	x	x	x	x						x
233	2000		x	x	x	x	x		x					x
233	2021		x	x		x					x			
233	2030	x	x		x	x	x	x						x
233	2030			x		x					x			
233	2030H			x		x					x			
233	2040A	x	x			x	x		x					x
233	2040A			x		x					x			
233	2040B	x	x			x	x	x						x
233/4	2040B			x		x					x			
233/4	6047			x		x					x			
233	6054H			x		x					x			
233	6055H			x		x					x			
234	1801		x			x	x				x			x
234	1801			x		x	x			x				x
234	1802		x			x	x	x						x
234	1802			x	x	x	x			x		x		x
234	1803A		x	x	x	x	x							x
234	1803B		x			x								
234	1803B			x	x	x					x			
234	1804		x			x	x	x						x
234	1804			x		x	x			x		x		x
234	1805H		x	x		x					x			
234	1810	x	x	x		x	x	x	x					x
234	1811	x				x	x	x						x
234	1812		x			x	x		x					x
234	1812			x		x					x			
234	1813		x	x		x	x				x			x
234	1813H		x	x		x					x			
234	1815H		x	x		x					x			
234	1820	x	x	x		x	x	x	x					x
234	1830	x				x	x	x	x					x
234	1850	x				x	x	x	x					x
234	1852					x	x							x
234	1853	x				x	x	x	x					x

Table E – 4
Site-specific Mitigation for Roads: Fish, Water, and Soils

Roads	Road Status	Alternatives				Fish, Water, and Soils										
		B	D	F	H	F5	F6	F7	F8	F10	F11	F12	F13	F14	F16	F17
7560	E	x		x	x	x	x	x			x	x	x	x		
7560	E		x			x	x	x			x	x	x	x		
76054	P	x				x	x	x	x	x	x	x	x	x	x	x
76051	P		x					x	x	x	x	x	x	x	x	x
7605	P	x				x	x	x	x	x	x	x	x	x	x	x
7605	P		x		x			x	x	x	x	x	x	x	x	x
75682	E	x	x			x	x	x			x	x	x	x		
7568	E	x	x			x		x			x	x	x	x		
7566	E	x	x	x	x	x	x	x			x	x	x	x		
75653	E	x	x	x				x			x	x	x	x		
75652	E	x									x	x	x	x		
75651	E	x	x	x				x			x	x	x	x		
7565	E	x		x		x	x	x			x	x	x	x		
7565	E	x	x			x	x	x			x	x	x	x		
75619	E/P	x				x	x	x	x	x	x	x	x	x	x	x
7561	E/P	x	x			x	x	x	x	x	x	x	x	x	x	x
75607	P	x	x			x	x	x	x	x	x	x	x	x	x	x
75605	E	x	x	x				x			x	x	x	x		
75604	E		x	x	x			x			x	x	x	x		
75603	E	x		x	x			x			x	x	x	x		
75603	E		x					x			x	x	x	x		
75602	E/P	x	x		x	x		x	x	x	x	x	x	x	x	x

Appendix E

Table E – 5

Site-specific Mitigation for Roads: Wildlife & TES, Heritage, and Scenery

Roads	Road Status	Alternatives				Wildlife & TES	Heritage	Scenery		
		B	D	F	H	W9	H1	V9	V11	V12
7560	E	x		x	x					
7560	E		x			x				
76054	P	x				x				
76051	P		x			x				
7605	P	x			x	x		x		
7605	P		x			x		x		
75682	E	x	x			x				
7568	E	x	x						x	x
7566	E	x	x	x	x	x				
75653	E	x	x	x		x				
75652	E	x				x				
75651	E	x	x	x		x		x		
7565	E	x		x				x		
7565	E	x	x			x		x		
75619	E/P	x								
7561	E/P	x	x				x	x		
75607	P	x	x			x				
75605	E	x	x	x		x				
75604	E		x	x	x	x				
75603	E	x		x	x		x	x		
75603	E		x			x				
75602	E/P	x	x		x	x	x			

